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Systemic Reform

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Volume II

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AIMS OF EDUCATION

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AIMS OF EDUCATION

INTRODUCTION

For a fairly long time now, we have been engaged in the great task of educating the children of India, an independent *nation* with a rich variegated history, extraordinarily complex cultural diversity, and commitment to democratic values and general well-being. Given the enormity and importance of this task, it is necessary that we create occasions from time to time to sit back collectively and ask ourselves, 'What are we doing in our engagement with this task? Is there a need to ask ourselves afresh some of the basic questions such as what ought to be the purpose of education?' The constitution of the Focus Group on the Aims of Education is perhaps meant to provide such an occasion.

If we look at what the school education system has done in the last decades, perhaps we have much to be satisfied with. Products of this system have gone on to make their mark in diverse fields of national and international life. But there is also a deep disquiet about several aspects of our educational system, particularly the school system. The disquiet springs from a variety of factors, such as:

(a) the school system has come to be characterized with a kind of inflexibility that makes it very difficult to breathe fresh life into it;

(b) learning for children seems to have become a sort of isolated and perfunctory activity which they are unable to connect in any organic or vital way with the rest of their life;

(c) education has come to be perceived more and more as a *means* of ensuring the future 'well-being' of students (i.e., their place in society and their economic status which guarantees this place)—this has led to a neglect of children's *present* abilities and difficulties, which could deprive them of a quality of life much richer in content than that the education system prepares them for;

(d) what is presented and transmitted as knowledge in schools leaves out vital constituents of man's epistemic enterprise; and

(e) schools promote a regime of thought which discourages thinking and precludes new and surprising insights.

THE BACKGROUND

Education, of course, is *not* a modern practice, although it may be claimed that there is a modern way of practising it. So far as we assume it to be a system of teaching and learning, all traditional communities have devised both formal and informal ways of learning and teaching. The aim of such learning and teaching has primarily been to induct the child and the adolescent into the way of life of the community.

The most amazing bit of learning that takes place in very early childhood is learning to wield the language of the community, i.e., the native language of the child. One important aspect of this process is that there is not much of deliberate, organized teaching here. It is more a process of fairly unselfconscious entry into a specific world, the world of the community. St Augustine said a long time ago that language lights up the world for us. And we might add that every language lights up the world in its own specific way. For a child, the process of learning its native language is almost like a particular world gradually taking a distinctive shape within its 'field of vision'. Learning one's native language also involves learning to distinguish between the right and the wrong, the truth and the untruth, of one's native community. [In view of the great importance of language for education, we have appended a separate note on language to this report.]

One main educational concern of traditional communities was the transmission of various skills, especially those related to the economic life of the community: agriculture, hunting, fishing, and caring for its environment—its trees, animals, birds, water bodies, etc. But great emphasis was also placed on transmitting skills related to the pursuit of the community's specific desires and aspirations—broadly and perhaps misleadingly classified as 'aesthetic' and 'spiritual'—which have to do with giving expression to what might be called the community's 'inner' life. These skills include music, crafts, painting or drawing pictures, carving, pottery, creating various artefacts, which may be useful, but, very importantly, have this other expressive aspect.

A community traditionally assumes a degree of continuity for itself—continuity of its constituent structures of human relationships, which give it, to a large extent, its identity and meaning. Given this assumption, the aims of education within what might, somewhat misleadingly, be called a communitarian framework, have primarily to do with the community's idea of its well-being and flourishing. The highest value that education within such a framework was expected to promote and foster was, perhaps, 'allegiance to the community'.

However, even though community continues to be a powerful presence in our own times, and despite proliferation of deliberately constructed communities, the world has for a long time been moving away from a community-centric view of human existence in two widely divergent directions: the direction of the individual and the direction of the universal or the global. The well-being of the individual is seen to be more important than the well-being of the community. This perhaps is the genesis of the idea of human rights as of many other central concepts of the modern world.

Humanity is sometimes conceived as the 'community' of all individual human beings. But this is a serious misconstrual of the idea of a community. Our attachment to the notion of community is profound and persistent. In equating humanity to a community, we not only give expression to this attachment but also invest it with a meaning it does not have.

Given the radical change of perspective that has taken place, education must now be seen as fostering values which constitute the well-being of the individual on the one hand and the well-being of humanity on the other.

But the difficulty here, of course, is to be clear about the notion of the individual independent of the complex matrix of relationships in which an individual is inevitably located? And what is this all-inclusive humanity, as distinct from this or that specific variety of humanity?

The lack of clarity about the idea of an individual and humanity as such is bound to create difficulties for us in thinking about the aims of education in our times. Thus, for instance, we have to find a way out of a seeming contradiction such as: We must encourage children to cultivate the 'scientific temper' (that is, the tendency to follow their reason beyond the dictates of culture, tradition, and community) and also teach them the unassailable values of humanity. Also, we must find a stable room for the nation between the individual and the humanity.

AIMS OF EDUCATION

There are, however, issues relating to education about which we have a fairly clear idea and about which there ought to be general agreement to a large extent. It would be helpful to seek an answer to the question 'what ought to be the aims of education?' by way of our engagement with these issues:

(i) School education is a deliberate and more-or-less external intervention in the life of a child. Although much learning and teaching takes place at home, in the neighbourhood community, and in actual living communities in rural and tribal India, the school introduces the child to an environment of teaching and learning that, quite by design, marks itself off from the rest of the child's environment. Tagore's experience of his first day at school is repeated with greater or less intensity in most children's first encounter with school: "...all of a sudden I found my world vanishing from around me, giving place to wooden benches and straight walls staring at me with the blank stare of the blind."[*] While the school must perhaps have boundaries of its own—as the life of the school cannot just be merged with the life of the community around it—these boundaries must not become barriers. They must, on the other hand, facilitate the creation of vital links between children's experiences at home and in the community and what the school offers them.

(ii) Self-knowledge is diametrically opposed to self-ignorance and self-deception. To be deceived by others is bad but to be deceived by oneself is even worse. However, unfortunately, we deceive ourselves much of the time. The big fat ego, which most of us have, can remain fat only on a daily diet of self-deception. Self-knowledge can be achieved only through the knowledge of the other, and one cannot know the other without being just to the other. Education must be a continuous process of self-discovery, of learning the truth about oneself. This is a life long process; but the school, through insightful teaching and learning situations of various kinds, can bring home to the child the great importance of this process.

(iii) There is need to convince the child or the adolescent of the superiority of a life of virtues to a life of vice and wickedness. The only way to do this is to effectively demonstrate that genuine human happiness can spring only from a life lived in accordance with virtues. But, how is this to be done? How is one to counter the opposite belief that it is not the virtues but power and wealth that are constitutive of true happiness? In a world where the latter belief is predominant, it may be impossible to teach the value of virtues to our children. We need, therefore, to create the possibility of profound questioning of our social structure, and show in various ways the deep connection between human discontent and a life devoid of virtues.

In this connection, and in the light of so much of breast-beating about the need of 'value education', the following points need to be made about a virtuous or moral life: First, a virtuous man is not simply one who happens to possess the virtues, say, courage, intelligence, temperance, and so on. In isolation, virtues may not have anything to do with moral life at all. Thus, e.g., courage by itself can be put to incredibly evil use; think of the courage of Nathuram Godse. The same thing can be said of intelligence. As to temperance, if it is not tempered with the vital unity of a moral life, it is in perpetual danger of degenerating into soulless, ritualistic disciplining of oneself.

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[*] Tagore, Rabindranath 1996. My School. In Sisir Kumar Das (Ed.) *English Writings of Tagore*, vol. II. Sahitya Akademi.

What is it that breathes morality into the virtues? It is—we must have the courage to acknowledge—truth and love, or, in terms of our own powerful tradition of moral thought, *ahimsa*. Truth means freedom from self-deception; here it is never enough to speak the truth occasionally. As Wittgenstein puts it, "The truth can be spoken by someone who is already *at home* in it; not by someone who still lives in falsehood and reaches out from falsehood towards truth on just one occasion."[*] Courage, temperance, intelligence, and so on cannot come together in the vital unity of a virtuous life unless they are profoundly mediated by the love of truth. And the love of truth—when we are talking of a moral life—can flourish only in the supreme and active presence of *ahimsa*.

Secondly, in the context of a moral life, the means and the end must form a continuum such that, as it were, the means and the end make a wholesome unity. The distinction between the means and the end in this context, if there is one at all, is not the same as the distinction where the means is merely instrumental in producing the end, e.g., playing football as a means of keeping physically fit. Morality is not external to a virtuous life in the way football is external to physical fitness. (The position taken here is distinct from the utilitarian position epitomized in the dictum 'honesty is the best policy'.) In the moral sphere, the process is integral to the product and the product is inalienable from the process. Here, there can be no such thing as finding the most efficient means of achieving a predetermined goal (as in, say, matters of management), for the means in the pursuit of a moral end is not replaceable.

An important corollary of this is that if value education must be a part of the education system, values or virtues must be integral to the whole process of education. Value education cannot be imparted as a separate bit of education; the whole of education has to be value education. Here, we need powerful reminders, in a variety of ways, of the Gandhian ideas of ahimsa, peace, and harmony.

(iv) Cultural diversity is one of our greatest gifts. To respect and do justice to others is also to respect and do justice to their respective cultures or communities. We, therefore, need to radically change the centre versus periphery perspective on intercultural relationships in our country. Cultures on the so-called periphery must receive as much attention as cultures in the centre. As for education, its implication is that ways of life other than one's own must be imaginatively and effectively presented as deserving of as much respect as one's own.

(v) Individual differences are as important as cultural differences. Individual children frequently have capacities and skills which do not find adequate recognition in the school environment. Development and flourishing of these skills and capacities would not only enhance the individual's life but also enrich the life of the community. Education must therefore promote and nourish as wide a range of capacities and skills in our children as possible. The gamut of such skills include the performing arts (music, dance, drama, , and so on), painting and crafts, and literary abilities (weaving stories, wielding language to portray different aspects of life, a flair for metaphorical and poetic expression, etc.). Also, skills as diverse as some children's special capacity to bond with nature—with trees, birds, and animals— need to be nurtured.

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[*] Wittgenstein, Ludwig *1973. Culture and Value.* Blackwell.

(vi) Knowledge is not a unitary concept. There are different kinds of knowledge as well as different ways of knowing. The idea that objectivity, which is a necessary constituent of knowledge, can be achieved only if knowledge is free from emotions (care, concern, and love) must be abandoned. One implication of this for education is that literary and artistic creativity is as much part man's epistemic enterprise as is seeking knowledge through laboratory experiments or deductive reasoning. The former frequently enables us to see the truth in a way that the paradigmatic scientific quest cannot.

(vii) Education must be seen as a liberating process; otherwise, all that has been said so far will be rendered pointless. The process of education must therefore free itself from the shackles of all kinds of exploitation and injustice (e.g., poverty, gender discrimination, caste and communal bias), which prevent our children from being part of the process.

(viii) It is very important that school teaching and learning takes place in an environment that is aesthetically pleasing. It is also essential that children take an active part in creating such an environment for themselves.

(ix) It ought to be possible for every child to be proud of his or her nation. But, one can be proud of something only if it is an achievement of one's own or if one is very intimately connected with those whose achievement it is. We can be proud of our own achievements, or the achievements of our children or friends. If we feel an intimacy with God or nature, we can be proud of even the skies and the whole universe. It is therefore very important that education fosters within the child an intimacy with people who are directly connected with achievements which are part of our national heritage. It is of course equally important to see that children's pride in their own nation does not negate their pride in the great achievements of humanity as a whole.

SOME IMPLICATIONS FOR PEDAGOGY AND EVALUATION

It may be useful to consider some of the implications of what has been said so far for pedagogy and evaluation. The strangeness of the school environment can be mitigated by imaginatively linking the experience of school with the child's experience outside it in the community. While school might have many new and exciting experiences for the child, it must not appear as rejecting or even ignoring the child's experience in the community. Pedagogy will gain by incorporating children's experience of what the Greeks used to call *oikos*, and likewise it can teach them fresh ways of experiencing the world outside the school. For example, if a child has grown up in intimate contact with the nature around him, as most children in tribal communities do, school can enrich and enhance this intimacy by sharpening the child's awareness of his own natural environment—something that sadly does not happen in most of our schools. The role of the teacher here is absolutely crucial. One is reminded of the nineteen-year-old teacher who came to help Tagore with the teaching in his school:

> With him boys never felt that they were confined in the limit of a teaching class; they seemed to have their access to everywhere. They would go with him to the forest when in the spring the *sal* trees were in full blossom and he would recite to them his favourite poems, frenzied with excitement... He never had the feeling of distrust for the boys' capacity of understanding...He knew that it was not at all necessary for the boys to

understand literally and accurately, but that their minds should be roused, and in this he was always successful. He was not like other teachers, a mere vehicle of textbooks. He made his teaching personal, he himself was the source of it, and therefore it was made of life stuff, easily assimilable by the living human nature.'[*]

Pedagogy must draw upon resources of creativity and exploration, such as literature in its various forms and history in its uncovering modes, e.g., unmasking the mind of the colonizer as well as that of the colonized. It is important to establish connections between apparently discrete events and things, between things and events close to one and those distant in time and space—connections which can bring sudden light to the workings of the child's own mind.

If the whole of education is, in a sense, moral education, and if means and ends in moral matters are organically or internally connected, then the teacher, who is the primary vehicle of education, must be seen substantially as an embodiment of virtues in his role as a teacher.

Teaching should be in the conversational mode rather than in the mode of authoritarian monologue. It is in the conversational mode that the child is likely to grow in self-confidence and self-awareness and will more easily establish connections between the teachings and his own experience. Similarly, while learning discipline is an important part of education, externally imposed discipline should merge into the orderliness that children perceive as an essential part of their well-being. Enforced accountability should also therefore gradually give way to a sense of responsibility, which means that there should be more emphasis on self-assessment and shared accountability.

Intelligence is diverse, and pedagogy and evaluation should aim at making it possible for this diversity to bloom. Excellence in diverse areas should be recognized and rewarded. And it is children's responsiveness to what is taught rather than just their capacity to retain it that should be the focus of evaluation. Such responsiveness includes their ability to connect their learning to various other experiences in their life, their capacity to frame questions about the content of their learning in novel ways, and, particularly, their capacity to see deviations in their 'lessons' from the idea of the right and the good that the school might be trying to inculcate in them.

ANNEXURE: LANGUAGE, TRADITION AND RATIONALITY

We begin to learn as a part of growing up in our families. While learning to speak in our native tongue, we learn many things. We are inducted into the moral order/perspective of our family and community through language. We learn to name, identify, classify. evaluate, and define our experiences in our daily life. While growing up in our respective communities, we inherit concepts that consolidate our sense of self-identity. It is not necessary that we agree with all such views and perceptions, yet in some way we remain tied too them, e.g., it is possible to speak of originality or innovation only within the context of a practice and its traditions. Our practice of speaking a language becomes intelligible with the help of cognitive and evaluative notions such as 'grasping the meaning', 'seeing the point', 'understanding', 'recognizing as correct', 'recognizing the mistake', 'responding appropriately', etc.

In learning to speak a language, we develop, what Meinong called, knowledge-feelings and value-feelings. Knowledge-feelings refer to cognitive attitudes as these are expressed in judgment of knowledge and conviction, and value-feelings are expressed through valuing oneself and valuing other persons and things. In learning a language, we learn to think and recognize the significance of communicating our thoughts to others. In our interactions with others, we experience and become aware of patterns and structures of hierarchy, power and authority, subordination and oppression. We also learn to cope with these structures by finding ways to survive either by escaping them, accepting them, or confronting and resisting them. The easy way is not to resist or challenge but to accept them. However, this acceptance becomes possible only by discouraging independent thinking.

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[*] Tagore, Rabindranath 1996. My School. In Sisir Kumar Das (Ed.) *English Writings of Tagore*, vol. II. Sahitya Akademi.

The systematic structuring or ordering of our beliefs constitutes a theory, and a practice is developed through the consistency of our efforts. Practical knowledge serves as the bedrock of all knowledge. All theoretical knowledge is an articulation of what we have learnt through participation in the practices of our communities. In different communities, the practices and traditions vary widely.

The term 'tradition' may be interpreted in many ways. In its barest sense, it means that which is handed down or transmitted from generation to generation in a community because it consists of devices and principles that have helped the community to make sense of its experiences and activities. Perhaps, it was for this reason that Wittgenstein had rightly remarked, 'Tradition is not.... A thread he (man) can pick up when he feels like it any more than a man can choose his own ancestors."

Education, as a planned endeavour, at a personal level on a small scale or institutional level on a large scale, aims at making children capable of becoming active, responsible, productive, and caring members of society. They are made familiar with the various practices of the community by imparting the relevant of skills and ideas. . Ideally, education is supposed to encourage the students to analyse and evaluate their experiences, to doubt, to question, to investigate—in other words, to be inquisitive and to think independently.

As we grow, we face new and unfamiliar experiences which question our old ways of thinking as these experiences are either inconsistent with or at a considerable variance from what we had gradually learnt to take for granted. Such experiences are critical and challenging as they involve or require formulation of new concepts, revision of preconceived notions, and new ways of looking at and dealing with the world. , It is this unique human ability that is called rationality, which is manifested in human behaviour in a wide variety of ways.

Our attempts to make sense of our experiences, to comprehend the world that we live in, require that we recognize patterns, structures, and order in the world. Without such recognition, we would not be able to make any judgments, we would not be in a position to be certain about anything. This quest for certainty, taken to its extreme, may become a demand for a monistic and absolute criterion by which it would be possible to draw sharp lines between the rational and the irrational, knowledge and a lack of it. In becoming captives of such a restricting vision, we forget that there are numerous ways in which we learnt to know and to reason about the world. This forgetting leads us to reduce rationality to mere formulas of deductive reasoning, placing greater value on theory over practice, natural sciences over art, and information over knowledge.

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SYSTEMIC REFORMS FOR CURRICULUM CHANGE

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EXECUTIVE SUMMARY

1. It is in the context of 86th amendment to the Constitution of India and the explosive parental demand for education that we need to take a hard look at our continued failure to universalise school education at least up to class X, to improve the quality of our schools and to transform the Indian educational system so that it is able to realise the vision of society enshrined in the Constitution of India.
2. The school must proactively work against structures of exclusion and replace it by structures for inclusion and ensure full participation of children in school. Schools must enable every child to access schooling; and facilitate those who drop out or are pushed out to get back (older children). They must assure children of their continuance in school without any disruption at least until they reach class X. It must treat children as subjects with rights and States as duty-bearers with obligations to fulfil these rights. It must demonstrate, promote, and help to monitor the rights and well-being of ALL children in the community.
3. Further there must be a clear message that poor children and especially the first generation learners just do not have the support systems for learning at home. No child must be allowed to be pushed out of school for being a slow learner or for non- comprehension. The entire education system, its staff and line and the school teachers must realise that their governance system must change in an appropriate manner to be sensitive to such children.
4. It is the teacher who experiences first hand the journey of children to become 'children', and wade through all the social, cultural and linguistic barriers. The non-seriousness in transforming even a "single" non-school going child to a student dilutes the principle of universality and disempowers the teacher. Children's right to education and school participation bestows the teacher with the energy to keep the child in school and not get pushed out. Indeed there is such an intertwining of children's right to education and teacher empowerment. Trusting the teacher must be a non-negotiable.
5. The participation of the community in the classroom and the school at the primary school level requires that a part of the curriculum be formulated at the level of the school or at the level of a group of schools in the area of operation. In this process functionaries of CRC, BRC and DIETs need to be involved and indeed they must spend sufficient time in the schools as well with primary school children and over a sustained duration work with the teachers to evolve materials and ideas.
6. Systemic changes must be made to strengthen processes for democratisation of all existing educational institutions at all levels and mechanisms for gauging such processes must be in place. Democratisation of schools, departments and educational institutions occur only through a conscious strategy of decentralization. The local governance systems would require enormous support from the staff and line at all layers of the bureaucracy. The systemic issues in this regard are in laying out the contours of a multi-layered political and departmental system which functions at local, provincial and national levels and in understanding the

indispensable role each of such layers have in supporting children's right to education. In other words decentralization must not be construed as burdening the lower levels of hierarchy with responsibilities disproportionate to their decision-making functions. It is in granting flexibility and autonomy and the same time-taking on all the functions to formulate policies, allocate funds, issue administrative guide lines, provide academic support and a legal and normative framework which enable an autonomous decision making process at the lowest level. Ultimately, the system should be able to enhance school participation, accommodate cultural diversity, and initiate micro planning and social accountability.

7. There is a need to strengthen the community through better participation by the Gram Panchayat and empowering the teacher to perform his/her duties effectively. Yet, the call for decentralisation and local community participation is not a fundamentalist position. It is suggested because of the call for micro planning, accommodating the need for a child-wise strategy, resolving of local conflicts and solving problems at a local level. These decisions cannot be taken up at a level that is removed from the ground, and without the participation of the community as well as the local bodies. It is only in this context that respect for plurality and cultural diversities becomes inevitable, informing the curricular changes in consonance with the local contexts.
8. There should be clarity of roles and the entire structure should function based on the principle of subsidiarity. This will curtail duplication of responsibilities, wastage of time and resources and curb confusion. There should be structures for support to the 'local' and not just monitoring and fixing up targets. Most of all, the system calls for professionalisation and an intense participation of officials at all levels of the hierarchy.
9. The entire system should be process-driven apart from being target-driven. It calls for long-term intergenerational planning and not spurts of small projects for small periods of time. The system, in addition, should have a style of functioning that is receptive to the ground and provide for expertise and technical support in a systematic fashion in response to the demands made by teachers, professionals and educationists. In its annual review/report each layer such as the CRC, BRC, DIET, SCERT, NCERT and all the Departments of education, Boards of examination must give a record of number of policy modifications and initiatives that they have made in response to the demands made by the schools, teachers and community. Supply-driven teacher training programmes must be avoided at all costs and time must be taken to build the confidence of the schoolteachers whenever a "top-down" program is felt necessary. Further all decisions have to be institutionalised and not to be ad-hoc based on personal responses or fund driven agendas.
10. Inclusive Curriculum: The curriculum should respect cultural diversities and formulate policies, which will not exclude the beneficiaries of the system.
11. There is a need to commission studies and reports in a continuous manner to examine the functioning of decentralization of the education system as it is in operation and what have been the systemic and organizational changes and a constant sharing of experiences.

SYSTEMIC REFORMS FOR CURRICULUM CHANGE

CHAPTER 1 INTRODUCTION

LOOKING BACK, PLANNING THE FUTURE

The 86th amendment (year) to the Constitution of India has granted the right to education to all children of 6-14 years. This is a renewed promise the country made to 200 million children. The Directive Principles of State Policy (Article 45 of the Constitution of India) provides for care and protection of children from birth till they reach school (0-6 years). This affects 150 million children whose health and well-being is a mandate that the State is obligated to honour. In this context, we need to consider our continued failure to universalise school education, at least up to class X; to improve the quality of our schools and to transform the Indian educational system so that it is able to realise the vision of society enshrined in the Constitution of India.

High drop-out rates, low level of learning

Even after fifty-seven years of independence, an estimated 100-120 million children between the ages of 5-15 years have either never entered school, or dropped out of it. They constitute almost 50 per cent of our country's child population. Being out of school, they are subject to exploitation and the drudgery of work with little hope of realising their full potential. Engaged in unpaid domestic work and in the unorganised sector, these children are invisible both as workers and as children; their work goes unrecognised. Being out of school, girls succumb to the pressure for early child marriage that causes untold harm to their overall growth and development. Children who are physically and mentally challenged are grossly neglected, and they face enormous difficulties in getting any kind of schooling.

It is now a well established fact that government schools primarily cater to the poor. The majority of children who attend these schools do so against all odds. Although the system is one of the largest educational systems in the world, it is woefully wasteful and inefficient. It is indeed a matter of national concern that 54.6 per cent children (56.9 girls) drop out before they complete class 8 and 66 per cent (68.6 per cent girls) drop out before they reach class 10 (GOI, MHRD Website, provisional data for academic year 2001-02). [1] These percentages are appallingly low in tribal areas, backward districts and among the Scheduled Castes and Scheduled Tribes. Further, even after five years of continuous presence in schools, only 60 per cent of the children are able to read, write and do basic calculations. It is almost as if the system is designed to cater to a small percentage of children entering class one to continue up to class ten. Given the situation on the ground, a child entering class one in a rural government school or an urban municipal school is able to reach class ten by accident, not by design. The range of public and private provisioning of schools in the country accounts for an unfair and iniquitous education system.

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[1] Drop out rates: Primary (classes 1 to 5) Boys: 38.4%, Girls: 39.9 and total: 39%. Dropout rate at Upper Primary (Classes 1 to 8): Boys: 52.9%, Girls 56.9% and Total 54.6%. Drop out rate from classes 1 to 10: Boys

Teacher Shortages

While the percentage increase in enrolment from 1993 to 2003 has been 26.15 at primary, 37.49 at upper primary, 43.21 at high school level and 28.73 at secondary school level, the percentage increase in the number of teachers has not kept pace with the increase in enrolment or the percentage increase in the number of schools. The implications of this trend are worrisome as the major brunt of teacher shortages is being faced in rural, remote and tribal areas. While the rate of increase in the number of schools and teachers has been quite significant at the upper primary level, the system is structured on the premise that almost 1/3 of children entering primary school will drop out before they reach upper primary, and another 1/3 before they reach high school, and so on[2]

TYPES OF GOVERNMENT SCHOOLS

There is a wide range of government schools run by the Government of India, State Governments, local self-government institutions (Panchayats) in rural areas and municipal bodies in urban areas :

- **Formal government schools** – primary, upper-primary, high and secondary schools run by the state governments;
- **Transitional schools** – Education Guarantee Scheme Schools (Madhya Pradesh, Chhattisgarh), Rajiv Gandhi Pathashala (Rajasthan), Alternative Schools (several states with localised models and names), Shishu Shiksha Kendra (West Bengal) managed by local bodies or by the state governments;
- **Bridge Courses** (residential and non residential) – short term schools held for older out-of-school children to reach the age specific grade / class;
- **Alternative Schools** – six hour and four hour schools, mobile schools
- **Ashram Shalas** – residential formal schools for tribal children financed by the Ministry for Tribal Welfare;
- **Residential Schools** for disadvantaged groups like Scheduled Castes – financed by the concerned ministry for the welfare of disadvantaged communities;

64.2% Girls 68.6% and Toatal 66% (Source: DOEEL, MHRD, GOI website, provisional data for academic year 2001-02)

[2] Percentage increase in schools, enrolment and teachers, India

INDIA

Percentage increase in # of schools	**1986-93**	**1993-2003**
Primary	7.89	14.18
Upper Primary	17.11	50.65
Secondary	24.74	38.43
Higher Secondary	53.00	85.74
Percentage increase in enrolment	**1986-93**	**1993-2003**
Classes 1-5	12.94	26.15
Classes 6-8	24.93	37.49
Classes 9-10	32.11	43.21
Classes 11-12	55.72	28.73
Percentage increase in # of teachers	**1986-93**	**1993-2003**
Primary	8.75	17.83
Upper Primary	12.73	40.01
Secondary	14.62	20.09
Higher Secondary	44.30	68.68

- **Kendriya Vidyalaya** – for children of central government employees (including the armed forces) who are transferable across the country;
- **Navodaya Vidyalaya** – residential schools of excellence entirely funded and managed by the Government of India.

Private Schools

In addition, there are schools under private management which are government recognized, some of which receive government grant and some of which do not (unaided schools). Though in terms of the overall system these schools constitute only a small percentage, their number is rapidly increasing and their spread constitutes a major challenge to the government school system. There are also private schools catering to children with special needs-especially the blind, hearing-impaired, or slow-learners. It is worrisome that there is a large and growing number of unrecognised private schools and tuition centres that cater to children who can pay – thus loading the dice against children in poverty situations[3].

Facilities in Schools

While there is variety in the types of schools, there is even greater variety in the basic facilities and amenities available in the schools of the government system. In small villages there are schools that have no buildings of their own and run in public, community or rented premises. On the other extreme, in larger villages there are schools that have pucca structures of stone and brick, with playgrounds and even some trees. The Municipal Corporation schools in the metropolitan areas are often housed in buildings that were once fine structures, but have now deteriorated because of neglect.

Since the government schools are perceived as weak and unable to deliver quality education they are being supplanted by private schools; many of them advertise their unique selling point : 'English medium'.

Systemic concerns

Schools today therefore reflect community and economic differentiation, and also reinforce further segregation. A key systemic issue is to position the school as an institution that brings about social transformation and becomes a place for the realisation and protection of children's rights where equity and justice as enshrined in the Constitution are realised. In the Indian context schools are to be regarded as institutions that protect children against drudgery of labour and work, early child marriage and gender discrimination against all forms of social and cultural discrimination giving the new generation their share in the resources and cultural capital and all the accoutrements that come with being a student. Schools are public places available for public scrutiny. They must be places where children want to come and interact and learn with dignity and self-respect. More importantly, the school needs to transform itself into a place where children are able to realise their entitlement and where their right to education is proactively protected and pursued.

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[1] Pratichi (India) Trust: The Pratichi Education Report, New Delhi 2002. PROBE Report, Public Report on Basic Education in India, Oxford University Press, Delhi 1999 and Ramachandran, Vimala (ed): *Gender and Social Equity in Primary Education – Hierarchy of Access*, Sage Publications, New Delhi 2004

Exclusion of poor children from education

In view of the fact that government schools primarily cater to children from diverse poverty situations, the predicament of such children is central to the discourse on systemic reform. It is important to acknowledge that the school system is intimidating to the poor and unless the schools consciously decide to address the barriers, poor children would be excluded from the school system in the following manner:

Trying to understand attendance problems

The entire school system is designed on the assumption that families already have the means to send a child to school and are competent to deal with the rules that govern the system. It has no capacity to accommodate the uncertainties and instability of the poor family, with no literacy, which might account for irregularity of attendance, and in case of migrant labour, long spells of absence. At times the child's absence from school may also be due to his or her illness, or illness in the family. It could even be due to parents' inability to meet the system's expectations and procure certificates (such as medical, birth, caste, transfer) that govern school, or purchase educational material (notebooks, school bags). It must be recognised that when the school system does not appreciate and understand the difficulties faced by the poor it cannot motivate, counsel and win over the poor. Parents from extremely poor and socially marginalised communities find the system alien, unfamiliar and intimidating. All these lead to the child's exclusion.

Understanding the child's home environment

The school system is not sensitive to children who come from different cultural milieus. The incapacity of the school system to appreciate the cultural specificities of communities results in not tolerating children's absence in schools. Instead of trying to talk to the parents and the families as responsible adults, about the importance and need to abide by the norms that govern schools, the attitude and practices of teachers affect children adversely in many ways. The most worrying dimension is the effect of attitudes and practices on the innate self-confidence and self esteem of children, causing children to become diffident and fearful. In situations where the children's home language differs from the language of the school, comprehension is indeed a difficult issue. The inability of the school system to gear itself and reach out to such children within a culturally and socially sensitive environment needs serious attention.

First generation learners : discouraged, humiliated

Since many poor students are first generation learners their parents are unable to help them with their schoolwork. Children find it difficult to cope and are humiliated for being slow learners, dull students. They are classified as non-achievers. Repeatedly discouraged, they often end up failing in the examination. They are also punished for their inability to purchase textbooks, stationery, and uniforms and pay official and unofficial "school charges". In addition, they are subject to corporal punishment. Eventually as is only to be expected, they get pushed out of the school system[4].

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[4] Jha and Jhingran, Elementary Education for the Poorest and other Deprived Groups, Centre for Policy Research, New Delhi 2002 and Ramachandran, Vimala and ERU team: Snakes and Ladders: Factors Influencing Successful Primary School Completion for Children in Poverty Contexts; South Asian Human Development Sector Report No. 6, World Bank, New Delhi 2004.

Physically and mentally challenged children

Physically and mentally challenged children are effectively excluded from the schooling process due to lack of support services and inaccessibility both in terms of physical access and pedagogical strategies. Barriers to their learning and participation in the schooling process have seldom been addressed, leaving such children uncared for, and quite beyond the school.

Health, malnutrition

Recent evidence has shown that most poor children are malnourished and have no access to safe water, sanitation and health care, leading to frequent bouts of illness[5] like infections, stubborn coughs and cold and other chronic illnesses. An overwhelming proportion of children in government schools are from poor situations; poor nutrition and frequent bouts of illnesses (due to poor sanitary conditions and lack of access to healthcare) affect the ability of children to attend school regularly. While the mid-day meal is indeed a welcome addition to the school routine, a lot more needs to be done if we are to address the impact of poor nutrition and health on education.

Debilitating theoretical postures

More than the issue of poverty, the "poverty argument" - that poor children cannot attend schools as they are obliged to earn an income - discourages even an attempt to keep the poor child in school. This argument is so debilitating that poor children fight an every day battle against this ethos to survive in the school system.

Rigidity in rules and procedures

Out of school children often confront enormous difficulties in joining school. The system is rigid and does not accept children who wish to join school after the last date of admission is over. Moreover, it is not prepared to accommodate older children who have dropped out of school and wish to rejoin, or those who have learnt for some years outside the formal system. It is insensitive to those children who enter the formal stream through bridge courses, accelerated learning and special classes and excludes them by not giving time and academic support needed by children to adjust to the school.

Failure in examinations

Poor children do not have the support system (such as tuitions, coaching classes, learning environment at home and in schools) to cope with the complicated curriculum, especially at the elementary and secondary school levels resulting in the failure of roughly 50 per cent of them who take the Board examination. This results in a loss of self-worth, and eventual exclusion from the school system.

STILL TO DO ...

It is essential that efforts are made to ensure all the above barriers are overcome for schools to be schools, teachers to be teachers and children to be children. If we are to

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[5] Government of India, Planning Commission, Mid-term Review of the Ninth Five Year Plan, New Delhi 2001; Government of India, Planning Commission, Report of the Working Group on Child development for the 10th Five Year Plan, 2001; World Bank, Reaching the Child: An integrated approach to child development, Oxford University press, Delhi 2004.

Library

effect systemic reforms in curriculum framework, we must deal with issues of both sustaining children in schools until they reach class X and preparing the school system to accept and support every child who is out of school into school.

Allowing teachers to decide

Teachers derive their status as professionals from the multiplicity of challenges they face in deciding the specific nature of education that has to be imparted to each child, protecting his or her right to education. They need to have the power to decide what they are to teach, and how they are to assess the children. It is the teacher who experiences first hand the difficulties children encounter while negotiating social, cultural and linguistic barriers. Every single child out of school must be transformed into a student. Teachers must accept this as a professional challenge.

The universality of education cannot be achieved unless we have teachers whose commitment is beyond question; in whom we can trust entirely.

Tackling the erosion of the teaching profession

The teacher is the fulcrum around which the education system revolves. In the current context, the issue of providing adequate numbers of teachers in a rapidly expanding school system and in a situation of fiscal deficits (especially in the states) have led to the introduction of different kinds of teachers. The social status of the school teacher is also rapidly eroding and the teacher is blamed for almost all the ills of a dysfunctional government school system. While acknowledging that teacher accountability is indeed an important issue, the de-professionalization of teaching as a vocation is inextricably linked to the following:[6]

Inadequate teachers

The ratio of teachers to students is much below the required norm in many areas, and there is often an oversupply of teachers in many urban schools. Recent estimates point out that 15 per cent (95,588) of all primary schools are single classroom schools, with rural schools accounting for 95 per cent of single classroom schools; 17.51 per cent (1,11,635) of schools have only one teacher. 96 per cent of single-teacher schools are located in rural areas (DISE, NIEPA, 2005). This implies that teachers do not have the time and the energy to do all that is necessary to keep all the children in school and learning. In addition, State Governments have relaxed norms for both the number of teachers per group and lowered the eligibility qualifications, adding to their de-professionalization[7].

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[6] Almost all key reports since 1950s emphasize the importance of appointing adequate numbers of teachers, ensuring minimum standards with respect to entry level qualifications, providing ongoing academic support through in-service teacher training and in-site academic support and most importantly paying attention to morale and motivation of teachers. This has been a running theme in policy documents such as the National Education Commission of 1964, National Policy on Education 1968, 1986 and 1992. The NPE 1986 devotes a section on "The Teacher":

"The status of the teacher reflects the socio-cultural ethos of a society; it is said that no people can rise above the level of its teachers. The government and the community should endeavour to create conditions that will help motivate and inspire teachers on constructive and creative lines. Teachers should have the freedom to innovate, and to devise appropriate methods of communication and activities relevant to the needs, capabilities and concerns of the community.

[7] The number of teachers has steadily increased from 16,16,000 in 1990 to 18.96,000 in 2001 at the primary level and from 10,73,000 in 1990 to 13,26,000 in 2001 at the upper-primary level. Out of this 2,59,099 are Para teachers (or contract teachers) with primary schools accounting for 67.94 per cent of Para teachers in the country as a whole. (Source: Dr. Arun Mehta, presentation on DISE Data 2003-04, NIEPA 2005)

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Non-teaching functions

Schoolteachers are asked to do a range of non-teaching work such as collection of data for rural development schemes, national census, election work and other campaigns assigned to them by the district officials taking them away from the classroom. Indirectly, this legitimises the non-performance of the schoolteacher, undermining him/her as a professional.

Politicization of education

Systemic issues involving corruption (payment for transfers / prevention of transfers, deputation to teacher education institutions and other favoured appointments) for promotions and for special assignments, and court cases have seriously eroded the respect for the teacher in the community. Teacher cadre management is highly politicised, affecting the recruitment policy of new teachers in several states. A few states have even declared regular teachers a 'dying cadre' – arguing that it makes fiscal and administrative sense to opt for contract teachers.

Recommendations regarding Teacher Education

- Students at the senior secondary level are unique in several ways and hence their education would require teachers who are trained accordingly.
- There is no pre-service teacher-training programme for +2 teachers in the country. Such a programme, which once existed in the form of the M.Sc.Education programmes in the Regional Institutes of Education. Such programmes may have to be offered on a larger scale if suitably trained teachers are to manage the curriculum at this stage.
- Teacher training programmes at the pre-service level needs to have a paper on guidance and counselling to provide them the required orientation and training in the discipline.

Manpower planning:

- There seems to be a vast gap between the demand and supply of trained manpower at the secondary stage.
- This is because of an absence of an agency or a mechanism to determine how much of excess manpower is acceptable for a state.
- Surplus trained manpower has not only caused unemployment, it has also lead to an exploitation of teachers by the management.
- There seems to be no difference between the private and the government management in this regard.

Redundant teachers' training

Teachers' trainings on improvement of quality of education have become ends in themselves, disconnected from the child and her/his right to education. Teachers routinely repeat jargon–'child centred learning', 'joyful learning' 'from known to unknown' and so on, acquired at the training programmes which are quite out of context. As these jingles have not evolved as an organic process in response to the teacher's own demand for professionalisation of his/her services, they are often seen as being superficial and redundant.

CHAPTER 2

THE SCHOOL AS PART OF A SYSTEM

Education policy in India is couched in the rhetoric of decentralisation and habitation level planning. Policy documents recognise the need for context specific planning, for assigning an important role for people's participation through local institutions such as the SEC/VEC/SMC as well as the elected bodies such as the gram panchayats.

In actual practice, however, schools are the tail end of the system, receiving instructions and orders from above. They are expected to follow guidelines provided by the Central Government through the Sarva Shiksha Abhiyan. To the last detail, the amounts to be spent and the budget lines are fixed, leaving little autonomy to the wisdom of the school - and its teachers and the needs of the children.

Some suggestions:

The school at the primary school level should work towards demystifying the understanding of curriculum and syllabus. There must be a public awareness on what the parents must legitimately demand from the system regarding what children can learn and must learn in a language and rhetoric that makes sense to them. Expectations of achievements from poor children must be the same for all children. In other words it must be recognized that low levels of expectations or emphasis on minimum levels of learning would lead to further marginalisation of poor children.

The gram panchayats must be equipped to bring to the notice of concerned authorities the kind of support school teachers would need to teach in the school.

Any attempt to improve quality of education as a patronizing, top-down, supply driven programme becomes unworkable and counterproductive.

There needs to be a considerable amount of flexibility in the process of addressing the schooling and learning demands of first generation learners in schools. Corrective administrative changes by the education department to make the child comfortable are integral to the definition of curriculum framework and the provision of quality of education. Administrative guidelines need to be issued to encourage flexibility in transacting textbooks, producing material, conducting examinations and continuous assessment of children. The peer group of teachers must be given autonomy to design the schedule of examination and assessment of children as all transitional interventions, and effective tackling of the backlog can be operationalised only at a micro-level. In an environment of so much regional and social diversity, we cannot hope to improve the quality of education through a patronizing, top-down, supply driven programme.

As a first and non-negotiable step, there needs to be clarity of roles. Decisions on the nature of classroom teaching need to be taken by schoolteachers; all those in the higher levels of education bureaucracy must work towards supporting the teachers. This would involve a reversal of the present system.

School and Community

The bureaucratic system, as it functions presently, tries to co-ordinate till the last point in the chain school and the teacher. It does not reach beyond the school to the wider community. In order to ensure greater participation of the community and bridge the gap between the community and the school, local institutions such as the SEC/ BEC/ SMC/ PTA/ School Cluster Committees at the village, block and District level have been set up. In practice, however, these new organisational arrangements have been used by the government to execute and implement its schemes. These committees have been involved in the construction of school buildings or in the appointment of para-teachers. However, they do not participate in decisions regarding attendance and regularity of teachers and children, or the problems encountered by children in school. They are not concerned with the problems faced by teachers, the day to day issues that may arise; they do not liase with authorities or elected bodies to bring to their notice the difficulties children or teachers face such as lack of text books, physical infrastructure, public transport and so on.

It is necessary to insist on the genuine participation of such institutions with a sense of ownership. In this context decentralisation means bringing schools close to the community.

DECENTRALISED EDUCATION SYSTEM

The 73rd Constitutional amendment provides for transfer of the responsibility for primary and secondary school education to the elected bodies. Consequently, there is no uniformity in the manner in which local bodies have been involved in school education across the states. While in several states a vast gamut of functions is assigned to PRIs at every level, in practice the PRIs, especially Taluk and Gram Panchayats, discharge few education-related tasks. The Central Advisory Board of

TABLE 1

Proposed Decentralisation Reforms in Education : CABE Committee

Level	Functions	Powers	Funds	Administrative Support
Zilla Parishad Standing Committee on Education	Overall Supervision of all Education Programme in the District upto Secondary level	Establishment and Maintainence of Schools upto Secondary level including recruitment and transfer affst Payment of Salaries; Disbursement of grants; Preperation and sanction of education Budget; Mobilisation of Resources	Mainly through Government Grants	Service of Staff of Education Department at the District level
Panchayat Samiti Standing Committee on Education	Supervision of AE, NFE, ECCE, Primary and Upper Primary Schools	Recruitment of Staff for AE, NFE and ECCE;Preperation of Budget and Sanctioning of Plan Expenditure from PS Education Budget	Grants from ZP, State and Central Grants; Funds through Taxation	Service of the Staff of Education Dept. at the Block Level
Village Education Committee	Promotion of Enrollment Drive; Supervision of Schools; Mobilization of Resources	Visit of education Institutions and check attendance and other registers; undertake construction	ZP, PS and State funds; local mobilisation	Support from HeadTeacher and other School Teachers

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[8] Manabi Majumdar, "Decentralization Reforms and Public Schools A Human Perspective". Journal of Educational Planning and Administration. Volume XVII No. 4. October 2003. pp 481-506.

Education (CABE) set up a Committee on Decentralised Management in 1993 to formulate guidelines on decentralisation in education in the context of the 73rd Amendment.[8]

It also proposed creation of standing committees on education at different levels, assigning comprehensive powers, functions and responsibilities to these bodies.

In practice, however, there has not been any such devolution of funds except in Kerala. The moot point is that such decentralisation is also fraught with problems, as discussed in the table given below;

Real decentralisation	**Meaningless Decentralisation**
• Power to spend money	• Bound to scheme related expenditure – no discretion in spending money
• Power to collect money	• Staff on deputation - no control over staff
• Discretion in spending money	• Limited power to raise resourcesü
• Power to hire, fire and control staff	• No direct responsibility – somebody else is responsible
• Direct accountability	

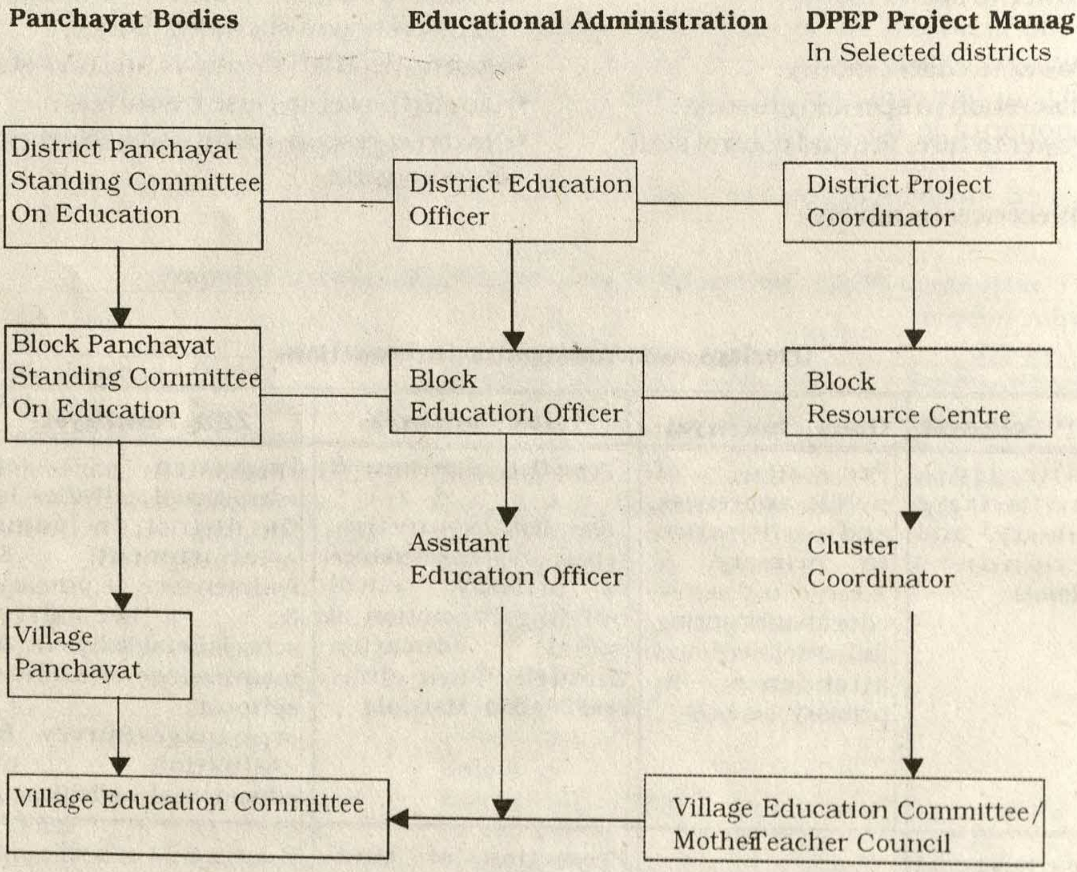
Overlaps and Ambiguities in Functions:

11th Schedule	Gram Panchayat	Taluk Panchaya	Zilla Panchayat
Education, including primary and secondary schools	Promotion of public awareness and participation in primary & secondary educationEnsuring full enrolment and attendance in primary schools	Promotion of primary & secondary educationConstruction, repair and maintenance of primary school buildingsPromotion of social education through youth clubs and Mahila Mandals	Promotion of educational activities in the district, including establishment & maintenance of primary & secondary schoolsEstablishment & maintenance of ashram schools & orphanagesSurvey & evaluation of educational activities
Technical training and vocational education		Promotion of rural artisan and vocational training	Establishment &maintenance of rural artisan & vocational trainin centresEncouraging & assisting rural vocational training centres
Adult and non-formal education	Promotion of adult literacy	Implementation of adult literacy	Planning & implementation of programme of adult literacy & non formal education

There have been overlaps and ambiguities among functionaries.

In effect PRIs have been reduced to implementing agencies rather than "deciders", with the staff working under them as "doers". Further, the tendency to execute programmes through parallel committees at the village level without involvement of the Gram Panchayats has resulted in undermining the stature of democratically elected local bodies. There has thus not been clarity in the demarcation of roles between PRIs and the Education bureaucracy.

Chart 1 : School Education : The Range of Institutional Actors at District and Sub--District Levels


Panchayat Bodies
Educational Administration
DPEP Project Manag.
In Selected districts
District Panchayat Standing Committee On Education
District Education Officer
District Project Coordinator
Block Panchayat Standing Committee On Education
Block Education Officer
Block Resource Centre
Assitant Education Officer
Cluster Coordinator
Village Panchayat
Village Education Committee
Village Education Committee/ MotherTeacher Council

Issues at the cluster, block and district levels

A host of institutional structures between the district level and the schools have been set up through the DPEP in the last one decade to strengthen the schools as well as the curriculum framework, namely: Cluster Resource Centres, Block Resource Centres and District Institutes of Education and Training.

Cluster Resource Centre

The CRC was to enable a peer-group of teachers to meet on a regular basis and discuss academic issues. These teacher resource centres are in various stages of actualisation across the country under the SSA. There is some variability in the structures, staffing and functions of teacher resource centres, and in some states, they are represented by the cluster organisers or resource persons without a full fledged centre. In practice however it has been noticed that these centres have become appendages of the administrative structures, offering little or no academic support to the schools. The personnel of the cluster resource centre have only worked to collect reports, data from the schoolteachers and supply the information to the district level, except for some exceptional interventions in select areas.

Block resource Centres

There are usually between 100 to 300 Primary schools and between 50 to 100 middle schools in the Block. The Block Resource Centre was envisaged as an important unit for teacher's capacity building at the elementary school level. But they too have become data collection and administrative units rather than academic units.

There should be an active participation of peers as professionals in sharing their experiences. The staff CRC and the BRC seldom offered academic support in response to the direct experiences of the school teachers, through actual visits to the school, just so that they observe and play a supportive role and not that of a school inspectorate monitoring the teachers from a position of authority and power. They must be equipped to provide conceptual clarity and guidance based on teachers' own sharing of their activities and interventions in order to help the child learn.

All such experiences must crystallize into policy initiatives and reforms at the district level through DIETS as well as the office of the District Education Officer and DPEP. These would be in the area of academic material and supplies, technical as well as governance and administrative support.

District Institutes of Education and Training (DIET)

Subsequent to the NPE-1986 and the adoption of the process of decentralisation, the District Institute of Education and Training (DIET) was established in each district exclusively to cater to the needs of elementary education of the particular district, and the CTEs and IASEs for secondary and senior secondary levels of education. The DIET Guidelines (1989) define the mission of DIETs as: "to provide academic and resource support at the grassroot level for the success of the various strategies and programs being undertaken in the areas of elementary (and adult) education." The focus was to respond to local contingencies and introduce curricular units pertaining to topics like local geography, folklore, legend, customs, forests, flora and fauna, fairs and festivals, demography, geology, minerals, agriculture, industry, service occupations, folk art, handicrafts, communities and tribes, institutions to suit local circumstances, and develop new items that can be used in elementary education and elementary teacher education programmes. In the case of districts that have a substantial tribal population DIETS were to design special primers for classes I and II in tribal languages

It was also to evolve systems for assessment and evaluation, design techniques and guidelines for continuous and summative learner evaluation. Further, it was required to support schools to evolve tests, question/item banks, rating scales, observation schedules, guidelines for diagnostic testing/remedial programmes talent identification procedures etc. It was to undertake testing on sample basis to assess achievement levels among learners, especially with reference to minimum levels prescribed for the primary and upper stage and for adult learners under NLM. DIETS were also meant to conduct workshops for the adoption/development work mentioned above, as also in-service programmes relating to CMDE.

In practice however it could not offer academic support or generate local material as envisaged. Lacking in resources, it failed to establish linkages with the CRCs, BRCs and take up innovations in material development at the District level. Lacking administrative support; the DIETs were not encouraged to take independent and autonomous initiatives in formulating work plans for the district as a whole. The recruitment of the DIET staff has been mostly on deputation drawing personnel with little experience (or interest) in educational planning or support to schools. This lack of professionalism is evident in the performance of the DIETs.

STATE COUNCIL FOR EDUCATIONAL RESEARCH AND TRAINING (SCERT)

SCERTs are basically state government institutions, but through its centrally sponsored scheme of Restructuring and Reorganization of Teacher Education, the Government of India has provided assistance for strengthening SCERTs, on condition that the state government gives a matching grant.

The SCERTs were set up to provide academic leadership within the state and act as the hub of academic research innovation, inspiration and motivation. These institutions were to be a symbol of quality and provide philosophical and sociological insights into education for transformation of society.

Although the responsibilities of SCERTs vary across states, in most states they are responsible mainly for designing the curriculum, production of textbooks, supervision of DIETs and teacher training.

In its functioning however it has been found that the SCERTs are driven not by academic but bureaucratic leadership. They say in planning or decision-making. Lacking in autonomy as well as funds for infrastructure development, even their libraries are poorly stocked and managed. Linkages with the units at the district or school level are poor; they lack the energy to keep abreast of ideological and theoretical debates in universities and international for a. They are, largely, ignorant even of the innovative work of NGOs in the country.

It is imperative that the SCERT emerge as the nodal point for the development of curricula; that it maintain a close link with teachers and schools. Curriculum reform is not a one-time exercise but a process of continuous learning and reflection, to be followed by well-planned action. Only an institute that has a high degree of capacity within itself can undertake such a process. Strengthening SCERTs and making them more professional is therefore a necessary and urgent area of institutional reform.

In accordance with the recommendations of the working group of the Tenth Plan, the Group also feels that there is a need for administrative, financial and academic autonomy. For example, the SCERTs must be actively involved in formulating the annual plan. No ad hoc directives must be issued, no matter how senior the bureaucrat issuing the directive, or how powerful the politician.

The SCERT must have the flexibility and the autonomy to invite experts from the university system and provide a forum for reflective practitioners from the school system. It must also have the institutional framework to identify and involve voluntary organisations and resource persons outside the government system who have contributed to fulfilling the objectives of children's right to education and have intervened with some amount of success in government schools, and aided teacher empowerment. It must pass the necessary directives, circulars, orders and guidelines governing inclusion of all children in schools. It must make policy recommendations regarding variations in assessment systems and in the system of examinations that are being introduced, to keep pace with the specific needs of the children concerned.

It must adequately address the diverse background and experiences children bring to the classroom – the different language, caste and class or communal affiliations of the homes they come from. Academic and administrative mechanisms that recognize and support such diversity must be put in place. The SCERT must also have a well-oiled institutionalised response to the demands made on them from the schools, the CRC, BRC and the DIETS. The functioning of the SCERT cannot be left to the availability of highly motivated and creative individuals; systems need to be established to promote and nurture creativity within the institution and among teachers. Equally, funding needs to be long term and reliable, thereby giving the institution a sense of stability and continuity.

It should encourage all processes leading to the creation of textbooks and other educational material by the CRC/BRC and DIET. In doing so, it must undertake research and support ground level researches in textbook development to set a standard for world class textbooks. It should also provide support to institutionalised procedures for teacher participation in the entire process of curriculum and textbook development. It should ensure that all the facilities are in place at the ground level for teacher training and other academic activities.

There is an urgent need to revise recruitment procedures to ensure that vacanciescan be filled with the right candidates. We need highly motivated, energetic professionals; not disinterested people with neither the aptitude nor the inclination to work for the country's children. There is need to reform the SCERTs from within. Unless this is done, it would become difficult for intelligent and sensitive professionals to participate at various levels to enhance the capacities of teachers and the quality of schools. The active primary teacher who has contributed to the strengthening of schools must also find a place as a resource person in the DIETS or SCERT.[9]

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[9] The Working Group of the Tenth Plan has made some of these recommendations.

CHAPTER 3

NATIONAL LEVEL INSTITUTIONS AND POLICIES

NCERT

The NCERT, NIEPA, NCTE are institutions at the national level with the mandate to help improve the quality of education in schools of the country. These institutions should be seen as facilitators and partners with the state level institutions rather than implementers themselves. Given the nature of the task and the current capacities at the state level, these institutions need to function as capacity enabling agents and as support institutions.

These institutions should be at the forefront of educational thought, engaging in quality research, which could inform ground-level practice. They need to analyse ideas being generated continuously, and develop mechanisms facilitating appropriate, high quality education. As pace setting institutions, they need to have the capacity and temperament to critique themselves.

As they are responsible for the functioning of the institutions at the taluk and at the village level, the national institutions must be aware of the conditions prevailing at these places: in terms of real contact and interaction with different sites of education, rather then in terms of statistics or written reports. These institutions therefore need to have programmes that involve them directly; that seek for multiple methods and ideas that can be broad based and extend to a large number of schools and teacher training institutions. The process of dissemination should be facilitative - enabling with a range of inputs, rather than only prescriptive.

In order that decentralisation and academic capacity building at the state level emerges as a possibility and further local level planning and action become possible, the system needs to build capacities at all levels. If the tasks are done by the central institutions and textbooks, research reports, syllabus and curriculum guidelines etc. are produced by national level bodies, only broad. What must happen is that the national institutions support states to develop their capabilities in all these and function as a forum and melting pot of ideas. The role of the NCERT must be to help states, develop their textbooks.

The institutions need to reduce centralisation and avoid laying down guidelines for everyone. What they need to develop is better concepts and processes through which people at the State level become capable of looking for their own answers. The present system rather than encouraging, discourages people to think of their own answers because the expectation is, that they would follow the answers provided from the national institutions. For research, State institutions are used basically as data conduits or arrangement managers for studies designed for the purposes known only to the national level institutions.

The NCERT needs to reorient its own faculty and start looking at knowledge not as a finished product to be handed down from the higher levels to the lower levels of hierarchy. Apart from having strong linkages with schools and teacher training institutions, the national institutions need to develop forums looking at issues of education in order to widen the scope of discussions. These forums may include people from the universities, NGOs working in education as well as other interested individuals including schoolteachers. These forums would not only deliberate issues among themselves but also to be available to help states in their efforts to improve their textbooks and other processes.

These national level institutions need to review their mechanisms of recruitment and promotion, and the choice of roles, both as individuals in the organisation as well as for the organisation itself. Lateral channels for entry should be opened, and also opportunities for people who have worked at the field level to spend a specified period of time in national institutions. This will inject much-needed energy into national institutions which are, often, alienated from ground realities.

It must show case the best practices in terms of systemic reforms and processes, periodically through workshops and seminars. It must inform the Secretaries of Education and Heads of School Education, SCERT and SSA about the initiatives taken up elsewhere and act as an institution for 'Education Watch'.

The NCERT must commission studies on different aspects of the curriculum and work towards disseminating such studies up to the school level. It must work towards developing **an index of quality in the context of socio-economic factors and implementation of policies.**

The Ministry of Education at the Central level must ensure **that the fund flow is predictable and without disruption**, and must be willing to make **long-term commitments**. It must respect the local initiatives and stop issuing detailed instructions and guidelines on how money ought to be spent. This goes against teacher empowerment and nurturing of creativity.

Parallel structures and systems

The decade of the eighties and the nineties saw the emergence of a range of centrally sponsored schemes and projects[10] (many of them with external donor funding) to address the challenge of universalisation. These were autonomous bodies, which were registered under the Societies Registration Act and run by the functionaries within the government. This structure, it was hoped, would provide flexibility and openness, and ensure that funds meant for the project would be "safe" and not absorbed into the general treasury account of the State. This was also seen as a necessary mechanism to reach out to children in remote areas through para professional teachers, and to mobilise girls. Further structures for training and resources were set up to meet the dynamism of the local community as it was perceived that the existing departmental structures were incapable of organising intensive on going training. Experiences of different state level structures reveal a disturbingly mixed picture. The interaction of these structures with the mainline education department tended to be minimal; Institutions like the SCERT were sidelined, with project level efforts at textbook development, teacher training and micro planning. The autonomous bodies ended up weakening the formal system by taking away experienced professionals and administrators.

The process of educational planning and policy making has a long history, which has evolved as an organic process over a period of time. Thus the recommendations of Commissions and institutions have informed the policies which had critiqued the status of education planning and offered corrective steps time and again. This long track record of education planning that had continuity, and evolved as an organic process of public debate and institution building was ignored and disrupted by setting up fund-driven parallel institutions. The irony is that these parallel structures not only had a negative impact on the morale and the efficiency of formal and mainstream structures, but even the learning from these "innovations" was lost when the projects were wound up.

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[10] 1987 onwards: creation of autonomous quasi-government bodies outside the formal administrative structure for implementation of EFA projects, namely:
Rajasthan Shiksha Karmi Project, 1987 (Sida funded and then by DFID)
Bihar Education Project, 1991(Unicef funded)
Rajasthan Lok Jumbish, 1992 (Sida funded and then by DFID)
UP Basic Education Project, 1992 (World Bank funded)
District Primary Education Project (DPEP), 1993 (Donor consortium including World Bank, European Commission, DFID, Netherlands Government, UNICEF)

Short projects versus long-term vision

Planning for education requires a long-term intergenerational vision. In the past decade, this was substituted by a time bound project mode with a disjunction between long-term policy perspective and short-term project strategies. Instead of investing in augmenting the capacity of the state governments, externally aided projects pressured such governments to fix targets and produce outcomes quite mechanically. All that occurred was ad hoc spending driven by an energetic official heading the parallel system or the Secretary of Education. This resulted in subverting entrenched institutions, in deinstitutionalised decision-makings. Many states spent money on contract appointments of teachers in schools, and on faculty of DIETs and SCERTs, and used precious resources for unproductive purposes.

This aggravated the lethargy of institutions such as the CRC/ BRC/ DIET and the SCERT, which became essentially bureaucratic structures established to carry out tasks assigned to them by the government. Having no self-motivation, space to innovate, explore or analyse, they only implemented programmes designed elsewhere. Given this situation, they were not in a position to respond to the needs of teachers and schools – and in fact treated the teachers and the schools "under them" as subordinate bodies, perpetuating a hierarchical and non-democratic culture.

Given this situation, we need to ask who is accountable, and to whom. The biggest challenge is to set in place accountability systems that ensure that the institutions are **ultimately accountable to the children and their families**; that they are held accountable for ensuring the realisation of the right of every child to quality education.

Resource and financial constraints

The resources for education have to be examined in detail. The extent of funding and the quantum of support to education would be a part of the detailed reports / estimates made by committees set up by the Ministry of Human Resource Development. There is a need to consider the manner of fund disbursal and the procedures of monitoring expenditure and accounting for utilization. The current processes tend to emphasise procedures and norms rather than the nature and quality of work. In the context of the diversity of the situation that the system is engaged with, the need for flexible and sensible norms is acute.

This Focus Group feels that the division of funds available for education between the State Government and the Central government also needs to be examined. While the Central support for funding is often tied to pre-determined schemes (CSS) the ability of state Governments to meet the finances required for universal education is compromised, especially when many state governments face serious fiscal shortages.

This has also resulted in the inability of state governments to sustain activities initiated in time bound projects.

The Group deliberated on the issue of rigidity of financial processes, especially vis-à-vis unit costs and the impact of this on the capacity to undertake meaningful activities. Government of India schemes, including the Sarva Shiksha Abhiyan indicate unit costs, for example, of Rs. 70 per day per teacher for training in SSA, the number of bridge courses and number of children in bridge courses, unit costs for residential bridge courses and non residential bridge courses, compulsory inclusion of a model cluster school in the NPEGEL programme under SSA) that are uniform all over the country, and funds are sanctioned on the basis of such fixed unit costs. The limitations imposed by such uniform unit costs prescribed across the country need to be addressed in order to enable institutions to carry out their activities effectively. This is particularly important in remote and tribal areas, for specific communities/ social groups and in certain situations.

As is apparent, unit costs cannot be uniform across such a large and diverse country as ours. The cost of training a teacher varies, depending on where the training is held, the particular travel costs within a particular region etc. Equally, the costs of running bridge courses or of intensive activities to promote girls' education cannot be the same across the length and breadth of the country. The impact of unit cost driven planning is indeed quite grave. SSA plans are distorted to 'fit in' with uniform unit costs. This absurd situation needs a common sense solution. Designing programmes according to area specificity and needs of specific communities of teachers must become the norm.

Even more important, 'unit costs' circumscribe the very range of activities that can be undertaken. Goals of programmes such as improving quality, bringing all children to school etc. can involve a wide range of activities, and it is impossible to anticipate all such activities, much less cost them, in advance. However, the fact that unit costs are defined for some sets of activities and not others, leads to the exclusion of activities for which unit costs are not indicated. This effectively cuts short the capacity to innovate and respond to emerging needs in a programme. Unit costs thus add to the proclivity for mechanical implementation of schemes, a huge impediment in approaching problems more imaginatively.

It is sometimes argued that such unit costs are 'indicative', but in fact, they become yardsticks for appraisal of district plans and financial auditing[11]. Thus government officials prefer to stick to activities for which unit costs are available, and prefer to exclude valuable activities for which unit costs may either not be indicated or for which these may be inadequate, as any transgression of unit costs invites audit objections. It is also argued that unit costs are needed to calculate the financial requirements for UEE. Without doubt, the financial requirements for UEE are calculated assuming some broad unit costs for various activities. However, it does not follow that such estimations also need to become strict guidelines for implementation. For instance, while calculating UEE requirements, a teacher's salary may be estimated at the rate of say Rs. 8,000 per month per teacher. However, the actual salary of teachers would vary, depending on state government scales, seniority, allowances etc. Thus a norm developed for calculation cannot become a unit cost for implementation. This logic also applies to other activities such as teacher training, community mobilization etc.

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[11] District SSA plans and state SSA plans are appraised by Ed CIL, NCERT and NIEPA faculty purely on the basis of compliance to unit costs. This needs to be acknowledged as a important limitation and efforts made to move away from unit cost driven appraisal to a process where the state government is trusted and empowered to make its own plans.

Another reason why unit costs are preferred is that they are seen to inculcate financial discipline and accountability. However, when unit costs are prescribed across the country, the impact can be the opposite. The maximum permitted amount may be used, even when it is not necessary. Designing activities to fit unit costs can actually lead to a waste of financial resources.

As the range of activities of centrally sponsored schemes has grown, along with the need for taking up a diverse set of activities, it is necessary to re-think the idea of fixing unit costs nationally. To do so, it would be necessary to devise more sophisticated ways of ensuring financial accountability, and if unit costs are used, these may need to be devised for much smaller units than states. In the District Primary Education Programme (DPEP), districts were allowed to devise their own, activity specific unit costs. This allowed programme planners and implementers to undertake a much wider range of strategies to address a particular situation than would have been possible with a single all-India unit cost.

For better programme implementation, **it is recommended that unit costs be devised locally, for specific activities,** rather than nationally. A mechanism for scrutinizing such unit costs can be set up to ensure financial accountability.

Professionalisation of education services

At present there is a lack of professionalism in education across the board - from the level of the schoolteacher to the institutions that are meant to provide academic support. The recruitment of staff is not necessarily based on their academic interest or competencies. There is a need therefore to look into recruitment policy and build the capacities of the staff and personnel. In addition, there must be lateral linkages at all layers of operation and systematic sharing of thoughts and experiences both laterally as well as vertically across clusters, blocks, districts, states and at the national level. This requires sufficient flexibility and autonomy for local officials vis-à-vis their superiors and in creating of processes of review and feedback that would enrich the intellectual capacities of all participants.

In a way, such a multi-layered intervention that draws upon community support for schools, active involvement of the PRIs at all levels, technical and academic support through district and sub-district level units requires reforms in governance and introduction of new processes of consultations with all the stakeholders. It should result in universalisation of school education and draw upon technical and educational expertise

Perspectives of the Focus Group: A Summary

We do not propose to set up new institutions or demolish existing ones. However, attempts must be made more sincerely and vigorously to:

1. **Proactively work against structures of exclusion to ensure the full participation of children in school.** Schools must ensure every child access to schooling; they must facilitate those who drop out or are pushed out to get back (older children). They must assure children continuous education at least until class X.
2. **Schools must be child-centred** and act in the best interests of the child aiding in realising the child's full potential. The school must be holistic: her health, nutritional status, and well-being, and what happens to children before they enter school and after they leave school are also part of the school's concerns. Schools must respect diversity and ensure equality of opportunity for all children (girls, working children, children with disabilities, victims of exploitation and violence).
3. **Our schools must trust school teachers** If we are to effect any quality reform in the system, all support systems from the cluster to the state level will have to base

their support on trust and respect for the teacher, granting him/her space a measure of autonomy. Teachers also need to be encouraged and assisted in forming their own support groups.

States must do away with contractual arrangements within the system. Elementary school teachers should have career path opportunities enabling them to join the district and state level curriculum development and capacity building organizations (DIETs and SCERTs), at the same time affording them the option to return to elementary school teaching if they so desire.

4. The participation of the community in the classroom and the school at the primary school level requires that a part of the curriculum be formulated at the level of the school or at group of schools in the area of operation. Functionaries of CRC, BRC and DIETs need to be involved in this process - they must spend sufficient time in the schools as well with primary school children, and over a sustained duration work with the teachers to evolve materials and ideas. **Systemic changes must be made to strengthen processes for democratisation of all existing educational institutions at all levels and mechanisms for gauging such processes must be in place.**
5. **The number of schools at the upper primary and secondary school levels must be increased**, keeping in view the right of children to education and the pressure for a larger number of higher classes. Since the content of subjects at this stage is based on constructing formal logical connections and conceptualisations which are not necessarily related to concrete experiences, schools must offer the possibility of conducting experiments, surveys, studies and other individual as well as group tasks within the curriculum framework. This requires that we set up processes and opportunities for constant consultations amongst teachers of the school, and other school teachers, as well as access to materials, a well-stocked library and so on. Higher-level authorities must be able to support innovations with the required technical assistance in training teachers and providing them the resources that are necessary.

First Generation Learners

We must acknowledge the fact that poor children, especially first generation learners, just do not have support systems for learning at home. No child must be pushed out of school for being a slow learner or for non- comprehension. The entire education system must be geared to support the requirements of such children, and treat with sensitivity and respect, so that they too feel encouraged to return to school each day.

Examination Reforms

For many students the Standard X year is a time of unremitting stress. Failure in the examination seen as a major disaster; among the better students, even failure to get sufficiently high marks causes grave anxiety and guilt. From the standpoint of the school, the examination determines the content and methodology of schooling right down to the upper-primary level. Thus if we are to conceptualize meaningful reforms in the educational system as a whole, it is essential that we turn a critical eye at this examination and the associated curriculum, syllabi and textbooks.

Whether one assigns marks or grades, one of the most fundamental reforms that must be effected is alternatives to the concept of overall pass or failure in the Standard X examination. The student who cannot make the grade at the X Standard exam must not have to go through life with the ignominious label "tenth standard fail". **Schools**

must be evaluated on the basis of the numbers of children who have continued their study, not on the basis of their performance in examination. The 15 or 16 year olds in Class X are adolescents; the schools must be ready to engage with them, providing them guidance and counselling as integral part of education.

6. Decentralisation: Democratisation of schools, departments and educational institutions can occur only through a conscious strategy of decentralization. The local governance systems would require enormous support from the staff and line at all layers of the bureaucracy. **Issues in this regard are in laying out the contours of a multi-layered political departmental system which functions at local, provincial and national levels and in understanding the indispensable role each of such layers have in supporting children's right to education.** Care must be taken to see that decentralization does not burden the lower levels of hierarchy with responsibilities disproportionate to their decision-making functions. There must be sufficient flexibility and autonomy in the educational system; policy formulation, fund allocation, provision of administrative guidelines, academic support must be geared to support the autonomous decision-making ability at the lowest levels.

7. Strengthening the community and local bodies:

Gram Panchayats need to be more involved, empowering the teacher to perform his/her duties effectively. Yet, the call for decentralisation and local community participation is not fundamentalist. It is necessary for micro planning, adopting child-wise strategy and resolving local conflicts. There is really no other solution. *The local bodies are best equipped to find solutions to problems. They are best acquainted with;* It is only in this context that respect for plurality and cultural diversities becomes inevitable, informing the curricular changes in consonance with the local contexts.

8. Avoiding duplication of roles:

There should be clarity of roles and the entire structure should function based on the principle of subsidiarity. This will curtail duplication of responsibilities, wastage of time and resources and curb confusion. There should be structures for support to the 'local' and not just monitoring and fixing up targets. **Most of all, the system calls for professionalisation and an intense participation of officials at all levels of the hierarchy.**

9. Planning & Communicating progress of work:

The entire system should be process-driven, apart from being target-driven. It calls for long-term intergenerational planning and not just spurts of small projects for limited periods. The system, in addition, should have a style of functioning that is receptive to the ground and provide for expertise and technical support in a systematic fashion in response to the demands made by teachers, professionals and educationists. In its annual review/report each layer such as the CRC, BRC, DIET, SCERT, NCERT and all the Departments of education, Boards of examination must give a record of the policy modifications and initiatives that they have made in response to the demands made by the schools, teachers and community. **Supply-driven teacher training Institutionalized procedures are necessary, so that decisions are not made in an ad hoc manner, or purely in response to the**

availability or lack of funds. Teacher training programmes must be conducted in response to local needs. Where a 'top-down' programme is necessary, schoolteachers should be taken into confidence so that they too see the need for it.

10. Need for continuous evaluation:

From time to time we must commission studies and reports to examine the decentralization of the education system; to see what systemic and organizational changes have occurred, and what impact they might have had.

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EXECUTIVE SUMMARY

Introduction: Exploring Possibilities

At the very outset, a critical analysis of the Indian School Education System reveals that it is largely a monolithic system perpetuating a kind of education which has resulted in a set of practices adopted for development of curriculum, syllabus and textbooks that is guided by the patterns and requirements of the examination system, rather than by the needs determined by a mix of criteria based on the child's learning requirement, aims of education and the socio-economic and cultural contexts of learners. A marked feature of educational practices in school are a dull routine, bored teachers and students and rote system of learning.

The position paper makes an effort to explore possibilities to provide for an enabling and flexible framework for promoting increased choices made by the schools and teachers possible, and a greater role for children and community in making those choices on a large scale. In certain cases the States themselves have attempted to redefine curriculum and develop textbooks and other teaching learning materials. In view of the above, it is important to analyse whether the existing policy and curricular framework facilitate development of diverse and appropriate curricular approaches for achieving desired aims and objectives of education.

Curriculum for Equality

The analysis of various policy documents clearly indicate that achieving equality through education has been consistently and unequivocally voiced, over the years. However, the challenge of translating the vision of equality into a curriculum framework has remained unanswered. The basic problem that emerges has been conceptualising flexibility or diversity which is closely linked to the systems inherent limitation and inability to define the role of the 'curriculum' and its transaction. Related to this are the associated problems in defining 'syllabus', 'standards' and going beyond the 'core' curriculum. This reluctance of the system to allow for true plurality and flexibility in the curriculum, as well as the restricted meaning of the term curriculum itself is most clearly evident in the report Learning Without Burden (GOI 1993).

The past ambiguity in decentralising and diversifying curricula and textbooks reflects a perceived need for appropriate mechanisms to ensure that quality conforms with common standards of attainment as well as to a broad national democratic vision. With a view to promoting decentralised curriculum development it is suggested that appropriate regulatory mechanisms be created by establishing an independent body at the State level with a federal national structure, to approve different curricular packages, which include textbooks, teacher training and recruitment processes, assessment and examinations, etc. The national structure may be answerable to the CABE, and should produce professionally developed criteria and guidelines, conduct documentation and review, and ensure appropriate consultation and sharing among the State bodies. It is also recommended that the regulatory mechanism must be professionally worked out to carefully avoid the attendant distortions and problems that may arise out of bureaucratic and political pressures, vested interests or even corrupt practices, within bodies established to approve the curricular packages[1].

Mapping, Conceptual, Field Notion of Curriculum Syllabus and Textbooks

The existing ground realities and curricular documents reveal that all the NCFs emphasize the concerns and issues but do not make a very clear connection between the concerns, aims and curricular contents. The pedagogy and the view on knowledge also remain some what hazily defined. The rational for almost all prescriptions is left un-stated. To address this, in this section the notions of curriculum, syllabus and textbooks have been examined and deliberated upon on the basis that the curriculum is a plan of facilitating learning for the child. This plan starts from where the child is, enumerates all the aspects and dimensions of learning that the considered necessary, gives reasons why such and such learning is considered necessary, and what educational aims it would serve. This plan also defines stage specific objectives, what content to teach and how to organise it. It also recommends general principles of teaching methods and evaluation, and criteria for good teaching learning material.

Justifications of the basis for making curriculum choices are very important. The key to understand the question of curriculum choice is to understand the relationship between the curriculum and the aims of education. Therefore, the curriculum is viewed more as a conceptual structure for decision making rather then details of what is to be done in the classroom.

The structure demands workable principles and criteria in most of the areas such as selection and organisation of content ways of interacting with children and classroom organisation, type of teaching-learning material etc. What is perceived to be important is what forms the basis for the choices made in syllabus, pedagogical decisions, textbooks etc. It is also suggested that a set of foundational assumptions a curriculum framework uses needs to be internally consistent, as clearly articulated as possible, and acceptable to all stakeholders.

Finally, operational definitions are also been placed for consideration to facilitate the process of curriculum development

Curriculum Framework: A plan that interprets educational aims vis-a-vis both individual and society, to arrive at an understanding of the kinds of learning experiences school must provide to children.

Curriculum: Curriculum is, perhaps, best thought of as that set of planned activities which are designed to implement a particular educational aim- set of such aims - in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered, together with statements of criteria for selection of content, and choices in methods, materials and evaluation". In reference to the framework above it would mean the 'curriculum core' and 'syllabus' put together.

Syllabus: refers to the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered; together with stage specific objectives.

Groups Essential Position

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[1] One member of the Focus Group has a dissenting view of this issue. She did not think that such a body should be created.

The overall approach advocated should be to provide a curriculum framework that:

- facilitates schools and teachers make decisions about choice of content, pedagogy, teaching learning material, evaluation, etc. at school level; in other words, a national curriculum framework for increased autonomy of the school
- provides help to the teacher in becoming reflective practitioner who learns from her own experiences
- emphasises learning with understanding and learning to learn, and helps children develop their own understanding based on their lived experiences; and;

General aims of education

It is proposed that within this framework, the articulation of aims needs to serve two major purposes. Firstly; reflect collective socio-political aspirations of the whole society, and second, serves a significant pedagogical purpose of provide direction to the teacher in choice of content and methods of education.. Aims are stated in two parts only as principles and no elaborate justifications and/or explanations are provided.

A. Values and Ideals

Education should promote in society, as well as help the learner develop a rational commitment to:

- Equality - of status and opportunity,
- Freedom – of thought, expression, beliefs, faith and worship; as a value in life
- Autonomy of mind - as independence of thinking, based on reason,
- Autonomy of action - freedom to chose, ability and freedom to decide and ability and freedom to act,
- Care and respect for others - going beyond respecting their freedom and autonomy, concern about well being and sensitivity to all members of society,
- Justice: social, economic and political.

B. Capabilities of individual human beings:

- Knowledge base - sufficiently broad knowledge base encompassing all crucial areas of socio-political life, and all basic ways of investigation and validation of knowledge
- Sensitivity to others - Sensitivity to others well beings and feelings coupled with knowledge should form basis of rational commitment to values. 'Others' should include all life forms.
- Rational/critical attitude: Critical rationality is the only way to autonomy of thought and action.
- Learning to learn - the future needs of development of knowledge, reason, sensitivity and skills can not be determined in advance. Therefore, ability to learn as new needs arise in new situations is necessary to function autonomously in a democratic society.
- Work and ability to participate in economic processes - choices in life and ability to participate in the democratic processes depends on ability to contribute to the society in its various functions.
- Aesthetic appreciation/creation - appreciation of beauty and art forms is an integral part of human life.

Stage wise objectives

The stage wise objectives need to be arrived at by keeping in mind the general aims of education, the developmental stages of children, nature of the knowledge in general and curricular subject areas in particular, and the child's socio-political contexts. Further the objectives have also have to be specific enough to be used as guidelines for content selection and organisation.

It is proposed that articulation of curricular objectives should also take cue from the statement of aims. Formulation of curricular objectives for all but the last stage; can be done at the state and district level and each school can reorganise them as per the need of their children and teachers.

Principles of content selection and organisation

Often demand for introducing new subjects in curriculum is voiced to emphasise certain concerns. It is thus suggested that selection and organisation of curricular knowledge should be considered from at least four different perspectives, those of: aims of education, epistemological perspective, child's learning and mental developmental, and the child's context.

Teaching -Learning Methods and Classroom Practices:

A number of basic principles have been outlined in order to guide the choice of classroom practices:

Ž Understanding that children construct their own knowledge
Ž Importance of Experiences in Learning
Ž Active Engagement of learners is important for construction of knowledge
Ž Variety of situations and multiplicity of methods important for creating diverse experiences
Ž The socio-economic context and identity of the learner
Ž An enabling Teacher Child relationship
Ž The role of and space for parents and community

Teaching Learning Material and Textbooks:

The present day classroom practices are, in almost all schools of the country, totally dominated by the textbooks. As a result it has acquired an aura and a standard format. What is needed is not a single textbook but a package of teaching learning material that could be used to engage the child in active learning. The textbook thus becomes a part of this package and not the only teaching learning material. Therefore, a large number of packages should be developed at state and district levels with adequate provision for cluster and school level modifications and supplementary materials. The availability of a number of alternative TLM packages of all approved quality to the certainly increased choice of the teachers.

Evaluation

Evaluation in education is always associated with objectives and implementation. By itself it is a process that determines the course of action and recommends changes for the betterment of the individual, society, nation and mankind. If we view education as preparation for meaningful life, then the process of evaluation presently been followed is limited in that it measures and assesses a very limited range of faculties of mind, is highly inadequate and lacks in giving a true picture of an individual's abilities or progress towards the aims of education.

Revamping the examination system is an important step of any meaningful educational change. In addition, making the model of continuous comprehensive evaluation effective necessarily calls for collective understanding among all concerned - child, teacher, parent, institutions of higher education and employer about what is being evaluated.

To improve the present system, the following is suggested:

Ž Strive for excellence in all aspects of the learning, especially in the writing of materials, correction of work, monitoring student progress, and responding to enquiries by the learners.

Ž Opportunity for revision and improvement of performance should consistently be available without exams and evaluation being used as a threat to study. Deduction of marks cannot be an alternative to motivating learners.

Ž The learning experience itself must be evaluated, and not only its outcomes. Learners are happy to comment on the totality of their experience, and this information can be used to modify the earning system as a whole. The learner must be able to assess her learning experiences, individually and as a part of a group.

CURRICULUM, SYLLABUS AND TEXTBOOKS

1. INTRODUCTION: EXPLORING POSSIBILITIES

"I have decided to end my life because the pressure of exams is getting to me. I can't take it any more", wrote Sudhanshu in his suicide note on March 4, 2005. The education that should give hope, teach the worth of life, develop capabilities to shape it, is often taking life and enabling very few. The majority of even those who pass exams with flying colours are capable only of seeing life as a deadly competitive race in which they have to win to survive. The principal, to whose school the unfortunate child belonged, seems to be utterly bewildered. "We have conducted several workshops involving students on the need to combat stress. One just doesn't know what goes on in the minds of students these days", she says. She does not realise that both the cause of the malaise as well as the remedy will have to be sought at a different plane. One has to re-examine the very ideas and ideals that are striving to take over the society and are increasingly becoming dominant in education, and one has to combat them not through the trendy workshops but through creating a more enabling vision of school and the process of education.

Children are being mercilessly overschooled in this misdirected educational system. That is one alarming aspect of Indian school education today. The other equally alarming aspect is millions of children grow up without entering a school, and many of those who enter drop out of unconcerned schools without learning anything.

A very brief survey of the present-day classrooms would be enough to convince a keen observer that the most marked features of most of our educational practices in schools are a dull routine, bored teachers and students, and rote learning. A perusal of the present practices followed for the development and use of curriculum, syllabi, and textbooks does not provide a very encouraging picture in terms of either eliminating this gloom in the classroom or pursuing the higher goals of education in a more meaningful manner. It is largely a monolithic system, perpetuating a kind of education that aims at producing standardized products that can pass certain examinations, rather than thinking, sensitive, capable, and responsible people.

Nevertheless, this gloom in the classroom is not unchallenged. There are a number of examples, from both the government and the non-government sectors, where efforts have been made to develop innovative curricular approaches leading to encouraging results in terms of both classroom practices and children's learning. These experiences provide examples of exploring possibilities, teachers who are more autonomous, children who participate meaningfully in the process of education, cheerful classes, and increased learning. This position paper makes an effort to provide a framework to explore possibilities of increased choices for the schools and teachers, and a greater role for children and community in making those choices, on a large scale.

One of the most important features of the present set of practices adopted for development of curriculum, syllabi, and textbooks is that it is guided by the patterns and requirements of the examination system, rather than by a mix of criteria based on the child's learning requirements, aims of education, and the socio-economic and cultural contexts of learners. In most cases, the term curriculum is used to mean very different things by different users and even by the same user in different contexts. It is usually referred to as the scheme of studies, where different subjects are seen in isolation and the subject-knowledge is embodied in the respective textbooks, to be memorised by all children. The socio-political, geographical, and cultural diversities that exist across different areas are usually ignored and the same textbook is viewed solely as representing the entire gamut of curricular needs and is used in the entire state. Despite several policy documents, curricular frameworks, and programmatic approaches mentioning the need for further decentralisation of curricular material development, at least up to the district level, there has rarely been any effort to facilitate this. The changes that have come over the years are either largely superficial in nature, leading to some tinkering here and there, or iterative where one or two new subjects/topics have been introduced because of one or more kinds of pressures, from central organisations, the judiciary, or some other pressure group.

The frame for the present practices followed for the development of curriculum, syllabi, and textbooks is largely guided by the national policies adopted since early 1970s. Starting from the early seventies, almost all states have adopted the 10+2 pattern of school education structure with a few exceptions where +2 or the senior secondary stage still continues to be partially managed by college education and governed by the university system. The adoption of 10+2 structure of education was promoted to mitigate the marked differences in the schemes of studies and bring some sort of harmony in the curriculum, syllabi, and examination patterns. The states were also encouraged to have autonomous examination boards to determine the curricula and examination pattern at both secondary and senior secondary levels. Although the role and functions of different boards, and the ways in which they undertake similar functions, vary greatly, they are viewed as mere examination conducting bodies and whose main responsibility is certification. As such, the nature and pattern of examination becomes the binding direction for the curricular approaches rather than this being the other way round. Some kinds of curriculum approval bodies also exist in some states. What is interesting is that the nature of structures that exist guides the nature of the curricular approach rather than the curricular approach determining the nature of structures required.

Barring a few states, elementary or the first seven or eight years of education was kept outside the purview of state education boards in most states. The State Council of Educational Research and Training (SCERT; known by a different name in some states), which came into existence around the same time as the boards, mainly by merging some of the existing teacher training institutions, are usually responsible for developing the syllabi and textbooks at the elementary level. The nature and functioning of the SCERTs also varies in certain respects. The National Council of Educational Research and Training (NCERT), the apex body at the national level, is expected to guide the states by providing a national framework for curriculum development and by building capacities at the state level both at the elementary and secondary level.

For a variety of reasons, the space for experimentation has been relatively greater, and hence the presence of creative experiences has also been higher at the elementary level. In certain cases, the states themselves have attempted to redefine curriculum and accordingly develop textbooks and other materials. For instance, Kerala adopted a new curricular approach, the process of developing textbooks, and teacher support materials for the primary stage under the District Primary Education Project (DPEP). The DPEP did encourage states to undertake such exercises but the nature, intensity, and depth of such initiatives varied from one state to the other. Much before the DPEP was implemented in selected districts and states, Eklavya, a Voluntary Organization in Madhya Pradesh, developed a different approach for primary education, known as Prathmik Shiksha Karyakram (Prashika). This was developed based on real experiences of teaching in government primary schools in rural areas. This experience later became an important reference point for those exploring new possibilities and the basis for a curricular package called 'Seekhna Sikhana' in Madhya Pradesh. Digantar, a small NGO in Rajasthan running a few schools for children coming from lower socio-economic strata in the outskirts of Jaipur, has been following a different curricular approach for more than two decades. The organisation has been actively sharing its conceptions and experiences with other government and non-government agencies. The curricular design and the pedagogy of the Alternative Schooling system built in Madhya Pradesh under the DPEP was based on Digantar's philosophy and approach. Several districts in Karnataka have adopted a textbook-free approach of teaching where the progression is guided and determined by a series of activities. This approach has been guided by the experiences of the Rishi Valley, an **NGO** working in Andhra Pradesh.

The very presence of these examples suggests the need for going into the reasons as to why was the prevalent practice considered inadequate and/or unsuitable. It is important to analyse whether the existing policy and curricular frameworks provide unambiguous aims and facilitate development of diverse and appropriate curricular approaches for achieving those aims. What are and what ought to be the conceptions of curriculum, syllabi, and textbooks if seen from the multiple lenses of the democratic polity, human philosophy, and theories of learning? How best can the principles of the various aspects of curriculum be defined so as to facilitate an education process which is stimulating and leads to development of rational, responsible, and caring human beings working towards a society which values equality, justice, democracy, and plurality? This position paper makes an attempt in this direction through exploring possibilities of providing greater space for choice to the teachers and students, as one recent graduate of school education in a conversation with one of the group members remarked that "the children should be allowed to think and the teachers should be allowed to teach as they consider fit".

2. A POLICY PERSPECTIVE

2.1 A CURRICULUM FOR EQUALITY?

The commitment towards achieving equality through education has consistently and unequivocally been voiced through the policy documents of independent India, including the reports of the two Commissions related to school education and the National Policy on Education 1986 with its review in 1992. The Secondary Education Commission Report (1952) had envisaged schools to play a crucial role in developing democratic citizenship, emphasizing that "democracy is based on faith and in the dignity and worth of every single individual", where the "innate 'worthfulness' cannot be eclipsed either by economic or racial or social consideration (p. 20)." As the first commission on school education of an independent country carved out of a traumatic partition, it sought schools that would lay the foundation for patriotism and cooperation, based on "an openness of mind and largeness of heart", and not through the "dragooning of different beliefs, ideas, tastes and interests into uniformity, which may possibly make for efficiency in a narrow and inferior sense, but inevitably impoverish life and curb the free expression of the human spirit." It called for educational opportunities that would translate into practice a passion for social justice *"inspired by the faith that social purposes are worth striving for, that life in a democratic set up is not playing for one's own hand but calls for a strenuous endeavour to equalize opportunities for all, and an unremitting fight for justice for the under-privileged."* (p. 21)

The subsequent Education Commission (GOI, 1966) had focused on a socialist democratic vision of national development, where equality of "education is deliberately used to develop more and more potential talent". Warning that "History shows numerous instances where small social groups have used education as a prerogative of their rule and as a tool for maintaining their hegemony" (Section 1.16), it had strongly recommended the Common School System (Section 1.36). It declared that: "It is the responsibility of the education system to bring different social classes and groups together and thus promote the emergence of an egalitarian and integrated society. But at present, instead of doing so, education is itself tending to increase social segregation and to perpetuate and widen class distinctions.... The position is thus undemocratic and inconsistent with the ideal of an egalitarian society. The children of the masses are compelled to receive sub-standard education ... while the economically privileged parents are able to 'buy' good education for their children. This is bad not only for the children of the poor but also for children from the rich and privileged groups. It gives them a short-term advantage in so far as it enables them to perpetuate and consolidate their position.... By segregating their children, they prevent them from sharing the life and experiences of the children of the poor and coming into contact with the realities of life. In addition to weakening social cohesion, they also render the education of their own children anaemic and incomplete" (Section 1.36, 1.37). It proposed the 'neighbourhood school' to "compel the rich, privileged and powerful classes to take an interest in the system of public education and thereby bring about its early improvement" (Section 10.19).

This proposal was subsequently upheld by the National Policy on Education (NPE) 1986, which recommended that "up to a given level, all students, irrespective of caste, creed, location or sex, have access to education of comparable quality" (Section 3.2). The commitment to provide education that promotes equality through 'removal of disparities' was again expressed by the Review of the NPE in the Report of the Ramamurthy Committee (1992): "To promote equality, it will be necessary to provide for equal opportunity to all not only in access, but also in the conditions for success. Besides, awareness of the inherent equality of all will be created through the core curriculum. The purpose is to remove prejudices and complexes transmitted through the social environment and the accident of birth (section 3.6)". It recommended that government schools be transformed through quality improvement into genuine neighbourhood schools and that *private schools should also be made freely accessible.* "The new Policy will lay special emphasis on the removal of disparities and on equalising educational opportunity by attending to the specific needs of those who have been denied equality so far (section 4.1)". Moreover, despite reservations about the iniquitous programme of a few well-endowed Navodaya Vidyalayas set up by the government, the policy could not change the course of things to come.

As it stands today, the system of public education has been rendered more unequal and differentiated than ever before, with increasing numbers of poor-quality and low-cost centres and 'alternative schools' being established for the poor. Moreover, the vocational stream remains the least sought after, being perceived as one meant for the 'less able', while poor families despair that schools alienate their children from their own vocations and livelihoods. This has happened despite the Ramamurthy Committee (1992) recommendations to link work with school through a common curricular stream having both vocational and non-vocational components, and different options with varying proportions of the two components. It had stated that *vocationalisation of school education must be seen in the context of equity and social justice, contrary to the present system where the vocational stream is clearly viewed as the one meant for the less able and the less fortunate* (Section 2.2.6).

2.2 CONTESTED CONCEPTIONS OF UNIFORMITY AND FLEXIBILITY

The challenge of translating the vision of equality into a curricular framework has remained unanswered, and as reflected in the series of Curriculum Framework documents (NCERT 1975, 1988, 2000) that followed, these wishful statements were not always matched with consonant conceptions of what formed a democratic and 'equalising' curriculum. The first doubts and tensions appeared in the 1975 document on the Curriculum for the Ten-year School, where it was stated that "For a vast country like ours with its diversity of languages, social customs, manners, mores and uneven economic development, the needs and demands of individuals and society will have differential pulls on the school curriculum, varying from one region to the other. For the sake of uniformity of standards and of national identity, therefore it is necessary to develop a common curriculum within a broad framework of acceptable principles and values" (Section 2.1).

This central concern for what was then ambiguously called 'uniformity of standards and national identity' served as a justification for the centralising tendency in curriculum construction. While the 1975 Curricular Framework confessed that the task of effecting 'internal transformation' of education to address the life, needs, and aspirations of the nation was becoming increasingly difficult under the mounting pressure of growing numbers of children, and owing to 'rigid postures and orthodox attitudes', it could not radically transcend these limitations. Some broad statements of objectives were made, which provided no indication of how a curriculum was to be designed to address the vision of education for children from diverse cultural and social backgrounds, while the document moved directly to the teaching and content of subject areas.

That children learn through active engagement with their experiences, and that their learning and development is shaped by their cultural capital, including how their societies have looked at the social and physical world around them, was never acknowledged. Also, the concern articulated by policy documents that the existing format of schooling, including the selection of the syllabus, the teaching approaches, and the examinations, was alienating most children and consistently reinforcing inequality was never addressed. The 1975 document continued to speak of the diverse requirements of children only in terms of "the special needs of the talented, the backward, and those coming from non-formal channels". In fact, its section on 'The Core Curriculum and Beyond' delineates how schools would need to go beyond the core curriculum to provide 'additional inputs' for those who may offer to study 'advanced units'; similarly, "students coming from the less fortunate schools or from non-formal education may also need remedial units or bridging units which schools would have to provide" (section 2.15).

2.3 LIMITED NOTIONS OF THE 'CURRICULUM' AND 'BEYOND THE CORE CURRICULUM'

The basic problem in conceptualising 'flexibility' or 'diversity' was closely tied to the system's inherent limitation and inability to define the role of the 'curriculum' in the first place. What was understood to be the 'curriculum'? It seemed to inevitably imply a fixed core content, which was variously called the 'syllabus' and also the 'standards', and was in the form of a list of topics derived from the subjects to be taught, so that going 'beyond the core' meant only providing either 'enrichment for the talented' or 'remedial inputs for the backward'.

This limited view of 'curriculum' was again manifested in the 1988 document 'National Curriculum for Elementary and Secondary Education: A Framework', which tried to define the 'core' through what were called the 'Minimum Levels of Learning (MLL)' (Section 2.2). There were several problems with this formulation and we shall not dwell on these here; it may suffice here to point out that the 'levels' were attempted to be defined in behavioural terms, and were dictated by the belief that differences lie in terms of hierarchical 'levels' rather than in equally valid but different ways of learning. We find in Section 2.2 the statement that:

> A high degree of flexibility and local initiatives are envisaged in designing and introducing remedial and enrichment programmes and materials not only by the State educational authorities but also by the individual schools and teachers to cater to the needs of *slow and fast learners* studying in the same class/grade in a school. However, the scope for flexibility in methodology and approach to transaction of curriculum is not expected to be used for introducing differential courses or similar measures which would accentuate disparities in standards of education in different parts of the country.

This reluctance of the system to allow for true plurality and flexibility in the curriculum, as well as the restricted meaning of the term 'curriculum' itself, was most clearly evident when the National Advisory Committee presented its report 'Learning Without Burden' (GOI, 1993). Some of the recommendations of the Committee were as follows:

> The process of curriculum framing and preparation of textbooks be decentralised so as to increase teachers' involvement in these tasks. Decentralisation should mean greater autonomy, within state-level apparatus, to district level boards or other relevant authority, and to heads of schools and classroom teachers to develop curricular materials on their own, best suited to needs of local environment. All the schools (must) be encouraged to innovate in all aspects of curriculum, including choice of textbooks and other materials (Recommendation No. 2a). Voluntary organisations with a specific commitment to pedagogical innovations within the formal or non-formal system (must) be provided greater freedom and support in development of curriculum, textbooks and teacher training (Recommendation No. 2b).
>
> The schools affiliated to CBSE in the states other than Delhi enjoy the prestige of being elite schools. The CBSE curriculum becomes a trend-setter for the State Boards leading to heavier curriculum for majority of children. Therefore the Committee recommends that jurisdiction of CBSE be restricted to Kendriya Vidyalayas and Navodaya Vidyalayas and all other schools be affiliated to the respective State Boards (Recommendation No. 4).

The Ministry subsequently set up its own Group, chaired by Y.N. Chaturvedi and constituted mainly of bureaucrats, to give views on the 'feasibility of implementing the recommendations' of the Advisory Committee. This Group countered most of the radical recommendations of the Committee, giving comments that reflected both its failure to appreciate the import of the Report and its own orthodoxy in educational matters. In fact, wherever the Committee speaks of the 'curriculum', the Group responds using the word 'syllabus', showing that it considers these terms to be identical. It also completely misses the point about the need for decentralisation in curriculum development, through local participation and ownership, and in which evaluation and certification constitute an important and often the most crucial component. It concedes at best to different curricula for 'different socio-cultural geographical zones' but that too developed centrally by the national/state agencies.

For instance, the Group's responses to the Recommendations 2 and 4 quoted above state that:

> The Group feels that while the size of committees at national or state level cannot be increased beyond a limit, a meaningful way of improving teachers' participation would be for either the NCERT/CBSE/Sate Boards/SCERTs to prepare the draft syllabus and finalise it after subjecting it to regional or district level consideration by a large body of teachers or, in the alternative, to get multiple syllabi developed at regional and district levels on the basis of which the final syllabi could be prepared at the state/national level. The Group however, does not recommend decentralisation in the preparation of syllabi or textbooks at the district or school level because it will be difficult to ensure *adequate projection of national identity and of composite culture of India. Also in such a situation, the adherence to even minimum standards in all parts of the country may become difficult* (p.5, emphasis added.).
>
> The Group however, shares the concern of the Yashpal Committee that many textbooks presently tend to project predominantly the urban middle class life style. Therefore, the Group recommends that... in states which have distinct socio-cultural geographical zones, different and parallel sets of textbooks with the same learning objectives should be prepared and used... The textbook preparation agencies should undertake systematic review of all textbooks to ensure that any trivial matter which may have got included in the textbooks is weeded out (p.6).
>
> As for CBSE it relies heavily on the NCERT for developing syllabi and preparing textbooks....Rightly the NCERT keeps in view the existing standards in the country, the capability of students, and standards in developed countries...If there is unnecessary material in some of the NCERT books, it should be eliminated. However, *there is not adequate material on record to substantiate that the CBSE syllabi or NCERT books per se are overloaded. ...If affiliation to the CBSE is good for Kendriya and Navodaya Vidyalayas it cannot be bad for other schools* (p.10).

2.4 THE ROLE OF THE TEXTBOOK AND 'NATIONAL STANDARDS'

The Secondary Education Commission (1952) had pointed out that the then curriculum was "narrow, bookish and theoretical" with an overloaded syllabus and unsuitable textbooks. It had suggested that the curriculum should not be divided into a number of watertight subjects, but that all subjects should be inter-related and should include relevant and significant content so that it could touch the lives of students. It also recommended that a high powered committee be set up in every State for selecting textbooks and for laying down appropriate criteria, emphasising that "No single textbook should be prescribed for any subject of study, but a reasonable number which satisfy the standards laid down, should be recommended, leaving the choice to the schools concerned" (p 83).

The subsequent Education Commission (1964–66) continued to highlight the poor quality of school education and commented on the low quality of textbooks, owing to the lack of research related to their preparation and production, and the lack of interest of top ranking scholars in this area. It called for the definition of 'national standards' and recommended centralised textbook production to conform to those, starting at the national level and also supporting establishment of bodies at the State level. In hindsight, we can see that the problematic role of the textbook continuing from the colonial education system, which has assumed a sacrosanct position in the school and the classroom, marginalising the role of the curriculum and the syllabus, was further strengthened from the then expectation that the 'nationally produced' textbook would 'far more precisely' indicate the national standards.

> The definition of these (national) standards as well as the organisation of a programme for their practical implementation will be greatly facilitated by the production of textbooks at the national level. *Such books can indicate the expected standard of attainment far more precisely than any curricula or syllabi*; and their practical use in schools is the surest method to raise standards and make the teaching in schools in different parts of the country fairly comparable. In a subject like science and mathematics there is not much scope for local variations and the adoption of common textbooks in all parts of the country is not only feasible but also desirable from several points of view... History is another difficult subject to teach, especially from the point of view of social and national integration, and authoritative well written books on the subject can be of immense help to all teachers. *At present there is hardly any common book which all the students in India read and is one of the reasons why our educational system contributes so little to national integration* (Section 9.19).

There are problems in the notion of 'common' textbooks across the country, in either science or history, especially since now, forty years later, there is a more nuanced understanding of child development and pedagogy that shows that learning happens when the 'content' of curricula is contextualised in the child's experiences and cultural knowledge, whether of plants, animals, people, or processes. However, at that time the recommendations seem to be guided more by the need to attract the best 'national' talent to contribute to the improvement of school education. Indeed, the Education Commission also saw this process of producing 'national books' as one that would help build capacities and "stimulate other centres into activity and especially promote similar enterprise at the State levels" (Section 9.20). "Even in areas where national books are available, independent attempts by States will stimulate each other and the Centre itself". For this it had recommended "a separate agency, preferably functioning on an autonomous and commercial basis, in close liaison with the Education Department" (Section 9.21).

Moreover, its own dilemma in proposing 'nationalisation' of textbooks is apparent when it attempts to somehow mitigate the problem of uniformity and homogenisation and calls for a multiplicity of textbooks:

> No useful purpose it served by having only one textbook in a subject for a given class – this is almost invariably the position under the existing programmes of nationalisation. It should be an important objective of policy to have at least three or four books in each subject for each class and leave it open to the teachers to choose the book best suited to the school. This is necessary even if there were to be a common syllabus for all schools. We have recommended, however, that there should be more than one approved syllabus and that each school should be permitted to adopt the syllabus best suited to its own condition (Section 9.21).

2.5 SUPPORTING DECENTRALISED CURRICULUM DEVELOPMENT

The past ambiguity in decentralising and diversifying curricula and textbooks reflects a perceived need for appropriate mechanisms to ensure quality, conformance with common 'standards of attainment' as well as to a broad national democratic vision. It becomes necessary to see how these concerns can be viewed and addressed in the present context. At the present juncture in time, on the one hand, several States have already initiated the process of developing their own textbooks, and conduct their own Board Examinations. In fact, the notions of curriculum and syllabus effectively lie collapsed in the textbook, which is taken to be the only indicator of what needs to be 'covered' for the examination. What is actually learnt by children and how the curriculum helps shape their development has thus got obscured.

This subversive role of the textbook has not only distorted its academic purpose but also allowed it to be used as a means of political and ideological propaganda by the State. In addition, private schools are increasingly opting for alternative textbooks by private publishers in classes that are relatively free from pressures of the Board Examination, and the market is increasingly exercising its influence, looking for ways to circumvent the control of the Board. The concerns for ensuring quality, broad 'standards of performance' and avoiding subversion of democratic norms get even more amplified in this scenario.

The present programme for universalisation of elementary education, namely the Sarva Shiksha Abhiyan, also calls for decentralisation of curriculum development to be done at the district level, highlighting the need to build capacities of District Institute of Education and Training (DIETs) and other related organisations. We endorse this need and recommend that the NCERT and other national bodies must consciously promote building of capacities in decentralised curriculum development and textbook production, in the States and at the district level. The articulation of broad standards of performance could be undertaken as part of the present National Curricular Review.

It is also suggested that appropriate regulatory mechanisms be created by establishing an independent body at the State level with a federal national structure to approve different curricular packages, which include textbooks, teacher training and recruitment processes, assessment and examinations, etc. The national structure may be answerable to the Central Advisory Board of Education (CABE), and should produce professionally developed criteria and guidelines, conduct documentation and review, and ensure appropriate consultation and sharing among the State bodies. It must also ensure that the process of regulation is kept transparent and all reports are made public. The State body must be constituted of persons with professional experience in education and also from NGOs and State Commissions on women, SC/St, etc.

We envisage that this State body will review and approve all curricular packages developed and used in different districts, and share its reports and materials at the National level. It must be ensured that this State body and the national structure must itself not have any conflict of interest and must not itself be involved in the development of curricular packages, including production of textbooks, conduct of examinations, etc. In the light of this process, all textbooks, even those produced by private publishers would be reviewed and approved by the State bodies. Moreover, our group strongly recommends that the regulatory mechanism must be professionally worked out to carefully avoid the attendant distortions and problems that may arise out of bureaucratic and political pressures, vested interests or even corrupt practices, within bodies established to approve the curricular packages[1].

3. MAPPING THE CONCEPTUAL FIELD: NOTIONS OF CURRICULUM, SYLLABUS AND TEXTBOOKS

3.1 THE EXISTING SCENARIO

The notions of curriculum and syllabi as existing in the three National Curricular Frameworks (NCFs) are close to each other. The NCF 75 actually defines the curriculum and syllabi. However, this notion of curriculum and syllabi does not include aims of education; it rather sees the aims as guiding the curriculum from outside. The other two documents also do not take up the task of defining but largely follow the same definition. All the NCFs emphasise the concerns and issues but do not make a very clear connection between the concerns, aims, and curricular content. The pedagogy and the view on knowledge also remain hazily defined. Thus, though the NCFs seem to have some form of definition for curriculum and syllabus, the relative importance of elements within the form and their interconnections remain either unexplored or even entirely neglected. The rationale for almost all prescriptions is left un-stated.

Most of the state level curricular documents are poor imitations of the NCFs and the emphasis is mainly on the scheme of study—time and weightage allocation—and syllabi. Most of them do not even see the larger picture of curriculum. Educational writing and discussion largely remains equivocal in the use of these terms. Even the most of innovative programmes, which have taken a much more flexible approach to curriculum, do not seem to have seen the entire picture. They often amplify their chosen aspect of education disproportionately.

The view taken on learning is often articulated in national and state documents, and most fervently in the NGO documents. The overall impression one gets in the national discourse on education is that a theory of learning, even if defined loosely and not very clearly, is all that is needed to plan education in general and curriculum in particular. There is hardly any mention of a view taken on knowledge beyond what is necessitated to articulate the chosen view of learning.

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[1] One member of the group disagrees with the recommendation of setting up such a national body.

3.2 A CONCEPTUAL FRAMEWORK AND OPERATIONAL DEFINITIONS

As mentioned above, the term 'curriculum' is one of the most ambiguous terms in present-day educational discourse in our country. It may be used to denote a mere subject-wise list of topics to be taught in a particular class on the one hand, and something that encompasses "the total experience provided to the children in as well as *out of school*"[2] on the other. There can be umpteen positions between these two ends of the spectrum and as many views of 'curriculum'[3]. The situation seems to be somewhat similar in many other countries. "Unfortunately", writes Christopher Winch, discussion of what aught to be taught "is sometimes made opaque by an either too wide or too narrow definition of what constitutes the curriculum. So, for instance, we have heard it said – by a Government appointed Inspector of Education – that the curriculum is 'everything that goes on in school' which would make the colour the school walls are painted a question of curriculum choice and bullying a part of curriculum content (see also Whitfield 1971). Conversely a definition such as a 'planned, sustained and regular learning, which is taken seriously, which has a distinct and structured content and which proceeds via some kind of stages of learning' (Wilson 1977) would make some activities which children engage in at school but which, arguably, are not taken seriously, e.g. woodwork, not part of the curriculum. The key to understanding the question of curriculum choice is to visualize the relationship between the curriculum and the aims of education. *The curriculum is the plan for the implementation of educational aims.*"[4]

In India, there is a tendency to take too wide a definition of curriculum in much of recent literature. All the publications under DPEP, many innovative NGOs, and recent discussions in curriculum seem to say too often that everything that happens in the school is part of the curriculum. On the other hand, at practical level, syllabus, construed as a list of objectives and topics in a particular subject, is often referred to as curriculum. These two tendencies may look contradictory in the first glance—literature claims everything to be curriculum and the planned/provisioned view covers an extremely narrow part of the school experience—but the very declaration that everything is curriculum is a challenge to planning. Therefore, what is considered essential is planned, and rest of the 'broad vision' of curriculum is left to happening by chance.

In an attempt to construct a meaningful notion of curriculum, it is important to note that in spite of all differences the main question that curriculum is concerned with is 'what sort of things we ought to teach in our educational institutions.... It is important to note that the question is one concerning prescription (what ought to be the case), and not merely of description (what actually is the case). And this question is the question of curriculum choice." [Winch] In the same vein, the four fundamental questions that form the basis of Ralf Tyler's classic book *Basic principles of curriculum and instruction* still provide a good guide to move in this direction:

1. What educational purposes should the schools seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained? (Tyler 1949, 1)

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[2] Primary Education Curriculum, Government of Kerala. (Emphasis added.)

[3] Digantar. Activity Based Teaching in Kerala and its Achievements: A study of pedagogical interventions in DPEP. 2002.

[4] Christopher Winch. Key Concepts in Philosophy of Education. Routlrdge. ...

In 1975, the Curriculum Committee that wrote 'The curriculum for ten-year school: A framework' defined what it meant by the term 'curriculum': "A curriculum may be regarded as the sum total of all the deliberately planned set of educational experiences provided to the child by the school. As such it is concerned with

(i) the general objectives of education at a particular stage or class
(ii) subject-wise instructional objectives and content
(iii) courses of studies and time allocation
(iv) teaching–learning experiences
(v) instructional aids and materials
(vi) evaluation of learning outcomes and feedback to pupils, teachers and parents."

This definition seems to engage with the four fundamental questions asked by Tyler, barring the fact that it is reluctant to address the first one of them squarely. The definition, though talks of "the general objectives of education at a particular stage or class", leaves the general aims of education to guide the curricular efforts from outside. It would be difficult to imagine any curriculum in the absence of general educational aims; therefore, one might speculate, perhaps the committee considered the issue of aims more as a matter of policy than as a matter of curriculum. Therefore, it sees curriculum as more or less synonymous with syllabus (if one can use the singular term 'syllabus' for a 'set of all syllabi of school subjects').

There seems to be an ambiguity as to whether, as per the definition, curriculum is 'concerned' with 'the underlying principles to decide' or with 'detailed descriptions' of what is listed in points (ii) to (vi). If it is the detailed description that is intended, then the definition is clearly that of syllabus. And if propagated as 'curriculum', it would limit choices that should be made by the schools and teachers keeping in view the profile of their students. A curriculum, seen from a wider perspective, is different from a course of study; it provides a basis for a course of study rather than being itself a course of study.

Another question that arises in connection to this definition is that of justification. What are the justifications for accepting stated curricular objectives, content to be taught, methods to be adopted, and so on? Justifications or basis for curricular choices are very important. Almost all curricular choices admit an alternative point of view; in fact, the very notion of a choice implies picking up one alternative from several available ones. A random picking up can hardly be called a choice. It merits calling a choice only if there are sharable grounds for the selection made. Thus, curricular choices need to be justified on commonly acceptable grounds.

Thus a fuller and usable definition of curriculum can be: *"Curriculum is, perhaps, best thought of as that set of planned activities which are designed to implement a particular educational aim – set of such aims – in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered" (Winch) together with statements of criteria for selection of content, and choices in methods, materials and evaluation. (Stenhouse)*

The six boxes shown here represent six broad and slightly overlapping areas of choices, their usual names are indicated but their 'content' has not been suggested. The bullets (*) shown in the boxes mean that something has to be written there, these boxes are just a convenient way to indicate groups of questions. If one takes development of 'autonomy based on reason' as an example of a general aim of education, it can be written next to one of the bullets in the area demarcated for aims. Similarly, when all the questions are appropriately answered, keeping in mind the linkages and consistency between different answers, this structure would be an example of a curriculum.

As understood here, a curriculum is neither a document nor a sequence of experiences. It is a plan of facilitating learning for the child. This plan starts from where the child is, enumerates all the aspects and dimensions of learning that are considered necessary, gives reasons why such and such learning is considered necessary, and what educational aims it would serve. The plan also defines stage-specific objectives, what content to teach, and how to organise it. It also recommends general principles of teaching methods and evaluation and criteria for good teaching–learning material. Such a plan, of course, is almost always set in a document or a set of documents and implemented through organised experiences for children under teachers' guidance; but perhaps conceptually the plan should remain in focus, while the document remains a contingent reality and the course of experiences as implementation of a plan.

What one needs to keep in mind is that all these terms evolve historically and serve certain purposes in a discourse. They are part of attempts to evolve better conceptual tools to reflect on practice and gradually refine it. Therefore, as it is possible to construct appropriate and very useful concepts, it is also possible to construct unhelpful concepts and definitions that blur the discourse rather than enlightening it. One needs to have no quarrel with any concept per se, but should carefully consider its suitability and coherence with the purpose, on the one hand, and acceptability in the general discourse on education, on the other.

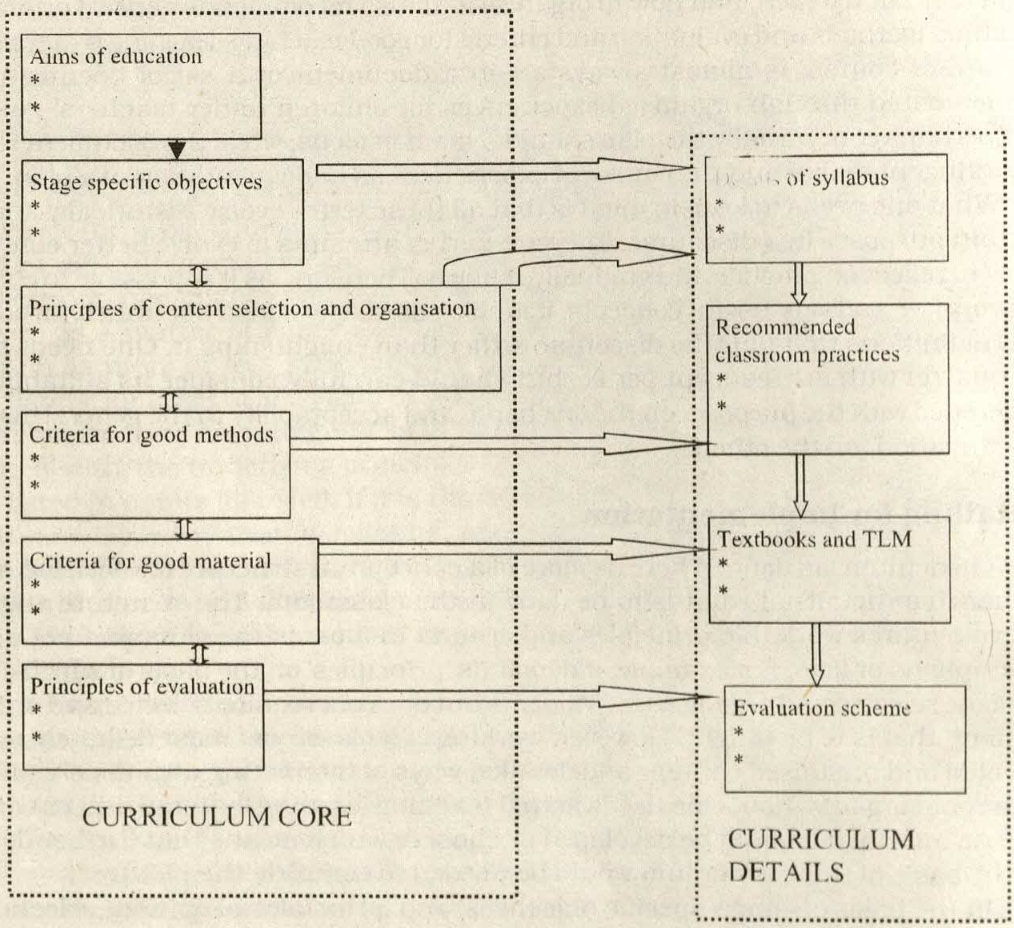
Detailing for Implementation

The curriculum, as defined here, is more of a conceptual structure for decision making rather than details of what is to be done in the classroom. The structure suggested above requires workable principles and criteria in most of the slots and not detailed descriptions or lists. For example, it demands 'principles' on the basis of which content could be selected and organised for students but does not require 'selected and organised content' that is to be taught. However, working in a classroom most definitely requires selected and organised content and detailed ways of interacting with the children and classroom organisation. One needs actual teaching learning material and not only the criteria on which it could be developed or chosen, which means that further detailing on the basis of this curriculum would be needed to complete the picture.

On the basis of 'stage-specific objectives' and 'principles of content selection and organisation', a selection of well-connected concepts, information, principles of knowledge construction, validation criteria, skills, values, attitudes, etc. could be made and formed into an organised body of knowledge suitable for the particular stage for which it is being planned. Thus, a *syllabus* for a particular stage could be generated from a given/accepted curriculum.

It must be emphasised here that what is to be included and what is not to be included in the syllabus will also be informed by the methods of teaching that are going to be used, or in other words, decisions on methods of teaching would have to be made simultaneously with the choice of content. But then, there can also be occasions when it might seem to be desirable that a particular topic should be taught (on the basis of implication of objectives and/or principles of content organisation) at a certain stage, and subsequently one looks for selection of appropriate ways of teaching it. If there is a situation where a topic X is seen as desirable to be taught at stage Y, but there are no appropriate methods available to introduce it to that age group of children, then perhaps the better course of action would be to wait for development of appropriate methods rather than insisting on introducing the topic.

In a similar manner, actual teaching would require details of methods, a variety of teaching–learning material, and a suitable evaluation system. The new picture would be somewhat like the diagram below:


Aims of education
*
*
Stage specific objectives
*
*
Principles of content selection and organisation
*
*
Criteria for good methods
*
*
Criteria for good material
*
*
Principles of evaluation
*
*
CURRICULUM CORE
Details of syllabus
*
*
Recommended classroom practices
*
*
Textbooks and TLM
*
*
Evaluation scheme
*
*
CURRICULUM DETAILS

The curriculum details provide the teacher with actual tools of classroom practices, while the curriculum core provides a rationale, up to a certain extent, for adopting those practices. Thus, the classroom practices can be connected with the larger goals of education. It could be plausibly argued that this conceptual structure enables the teacher to create a dynamic 'discourse' between theory and practice, and between educational ideals and educational practices.

When a teacher starts working with children in classrooms, he/she has some 'content' that he/she wants to teach them. They also have, at least in their minds, some 'methods' of teaching. They also use some material, minimal or elaborate, and have some idea about what it would mean to 'have learnt something' and what would be the appropriate indicators of that learning. In other words, they have a syllabus, appropriate methodology, a set of teaching–learning material, and a system of evaluation. That is the minimum academic preparation to embark upon teaching. However, that does not mean that each one of these components of classroom practices is well defined and clear in the teacher's mind. Very often, the only thing a teacher has is the textbook. The textbook becomes an embodiment of syllabus—*all that is in it has to be taught, and that is all that is to be taught*. It becomes a methodological guide—*has to be read and substantial portions memorised through repeated reading*. It also becomes the evaluation system—*questions at the end of each chapter have to be answered orally and in writing, reproducing the text from the book itself*. Here the textbook is an embodiment of the syllabus and of all aspects of classroom practices.

But this undistinguished way of looking at the textbook and teaching is totally unreflective. It becomes a very binding, routine, and mundane activity, which has very little to do with growth of children's understanding and their capabilities. All because the conceptual model that guides teachers' practices is incapable of helping them to learn from their own experiences, to connect their activity of teaching to human life, and to take into consideration children's experiences. It is a necessary (only necessary, not sufficient) condition for the teachers to understand the nature and purpose of their activity to liberate themselves and their students from the oppressive tyranny of the mundane routine imposed by such an unreflective use of textbooks. Then only can they become dynamic decision makers in the classroom and can be able to engage not only with the textbook but also with the children's minds.

Understanding that the textbook is only a tool, a convenient organisational mechanism to collect together at one place what the children are expected to learn, and awareness of the conceptual difference between the syllabus and the textbook are the two important conditions that enable the teacher to look beyond the textbook. The possibility of experiences of children being considered within the classroom gets a little boost with this distinction. In turn, the possibility of choice between the textbook and other experiences/resources encourages reflection on the choices made and, eventually, on the possibility of an improved textbook itself. Similar arguments could be made concerning conceptual distinction of teaching methods, evaluation, and between textbook and other material.

The point being deliberated here is *development of reflective teaching practices is a necessary condition for learning from one's own experience*. Reflective practices necessarily require theoretical models to organise experience into knowledge that can be shared, publicly examined, and used in situations other than in which this knowledge arises. It can also be argued that there is no teacher who does not have the ideas of syllabus, pedagogy, material, and evaluation. But there are very few who have them well articulated, rigorously examined, and reasonably justified on the basis of more general and widely shared principles and assumptions. Also, there are very few teachers who have rigorously worked out implications of the ideas held by them for classroom practices. The teachers are neither expected to make these distinctions nor provided with any opportunity to do so. Introduction of theoretical models, of which there is a variety, is a potent way of engendering reflective practices and encouraging autonomy of the teacher. The question is not what particular model does one have; it is *whether the model an educator has can be shared with others and debated about*.

However, linking classroom practices with syllabus, pedagogical choices, variety of teaching–learning material, and evaluation system is just the first step towards reflective practices. What is being taught, how, with what material, and how the learning shall be assessed can be explained and reflected in terms of syllabus, etc. But what forms the basis for the choices made in syllabus, pedagogical decisions, textbooks, etc.? We have seen that what we called curriculum should detail the reasons for these choices. But those reasons themselves may require further explanations and grounds for accepting them. Even at the cost of reiteration, let us take an example to understand this issue.

Suppose we want children at the upper primary level to notice, as part of their social sciences curriculum, the difference in treatment meted out to girls and boys in their village. And we want it to be 'learnt' through an active engagement with observing parents when they interact with their children and interviewing children themselves. Suppose one asks the teacher: *Why do you want the children to notice this difference and then keep this information in mind?*

Dialogue A

Answer: Because it is written in the syllabus, and shall form part of the examination.

Question: Why should it be part of the syllabus at all?

Answer: So that the children can understand the disadvantages girls face in their bringing up and social living.

Question: Why, as teachers, are we interested in what disadvantages girls face?

Answer: Because this will become the basis of children's further understanding of issues of social justice, equity, and their socio-economic reasons.

Question: Why is this knowledge and understanding supposed to be of interest?

Answer: Because it seems to be a reasonably effective way of developing sensitivity to issues of social justice, a commitment to equity and capability to act to correct the balance.

Of course, one can carry on the dialogue by further demanding: *Why should we bother about sensitivity to social justice, commitment to equity and capability to act in favour of these values?* But this brief series of questions and answers is enough to illustrate the points that need to be made here. One, in order to justify a small piece of content (it is only a way of elaborating, there can be no piece of content disconnected from the whole body of knowledge) in syllabus one has to refer to broader principles and values. These principles and values would point towards the kind of society considered desirable and how one thinks human beings should live. Looking from the other side, if education is supposed to contribute to actualisation of certain values in society, the curriculum framework would need to bring forth their connections to bear upon the selection of content. Two, a teacher who is aware of these connections should be able to make better choices about what route to take for development of such values and abilities.

It is possible to construct a similar dialogue about why the teacher chooses the observation and interview route to teach children this simple fact of differential treatment between boys and girls? Why does he/she not consider it enough to simply read this 'fact' from the textbook? In such a dialogue, the teacher will have to defend the choices by referring to assumptions/principles concerning human learning.

It seems a reasonable to draw a conclusion that the principles of content selection, criteria for good methods, material, and evaluation that are formulated for curriculum are based on a larger umber of assumptions, which one can perhaps call 'foundational assumptions' for quick reference. It could be claimed that the more aware the teachers, paper setters for examinations, and textbook writers are of these underlying assumptions, the better equipped they would be to keep the system consistent through suitable curriculum, syllabus, material, evaluation, and classroom practices. Also, the educational decision makers would be better prepared to reflect on their own practices, and therefore, better equipped to generate reliable professional knowledge. The system as a whole in such a situation should be less hesitant to recommend flexibility and better equipped to use the flexibility available. In short, it seems to be a necessary condition for promoting or enhancing the autonomy of the teacher; and a sure step towards sensitive engagement with the child.

The set of foundational assumptions a curriculum framework uses needs to be internally consistent, as clearly articulated as possible, and acceptable to all stakeholders. If there is a workable agreement on a core set of such well-articulated principles/assumptions, it should give a firm ground for informed debate and resolution of disputes about the content, methodology, etc. But the problem is that success in a complete and consistent articulation of all these assumptions always remains limited. One way of doing a reasonably good job in this area is to carefully examine the nature and connections of these foundational assumptions. A tentative suggestion could be that on the basis of this examination of their nature and connections, the bulk of foundational assumptions can be put into four slightly overlapping groups:

- assumptions concerning human being and society or socio-political assumptions,
- epistemological assumptions,
- assumptions about learning, and
- assumptions concerning the child and its context.

Assumptions Concerning Human Being and Society (Socio-political)

The values that are promoted through education, and that guide all further curricular efforts, themselves spring from the notions of a desirable society prevalent among the decision makers of human beings. A typical foundational statement in this area could be: *Education should aim at a pluralistic democratic society based on justice, equity and freedom*. Or a closely related social vision could be *autonomous collectives of autonomous human beings connected with each other in mutual appreciation and knowledge*. These are just two examples. A curriculum framework makes many assumptions about what is valuable in human life and how to live together, which could be called politico-ethical in nature.

This group of assumptions is perhaps the most important one and needs clearer consensus of all the concerned people. Also, though it allows for a great range of different articulations depending upon individual preferences, it is the least tolerant to violation of the agreed upon principles. If we want a usable curriculum framework that can be debated meaningfully and that people can identify with, then we need to state our basic assumptions/principles in this area clearly. The aims and objectives are mostly, though not exclusively, derived from or are simply rephrased versions of these assumptions.

Epistemological Assumptions

In education, the only route permissible to realise the values and dreams a society cherishes is the path of learning. If pluralistic society be a desirable goal, the only help education can render is through developing understanding, making information available, and teaching critical appraisal of ideas. Thus, the fulcrum of all educational endeavour is knowledge in its widest sense—including understanding, ways of thinking, values, and skills. An educator has to assume that knowing influences belief and action. If he/she denies this assumption, the very foundation of his/her educational effort would be broken off.

The issues of selection of knowledge to teach, their ordering, integrated versus subject-wise curricula, the information versus knowledge versus abilities debate, etc. heavily rely on the epistemological assumptions different participants in these debates make. One very important reason why not much headway is made in resolving educational debates is that the participants never get to the fundamental assumptions made. The curricular content selection and organisation heavily depends on the epistemological assumptions together with the assumptions about learning.

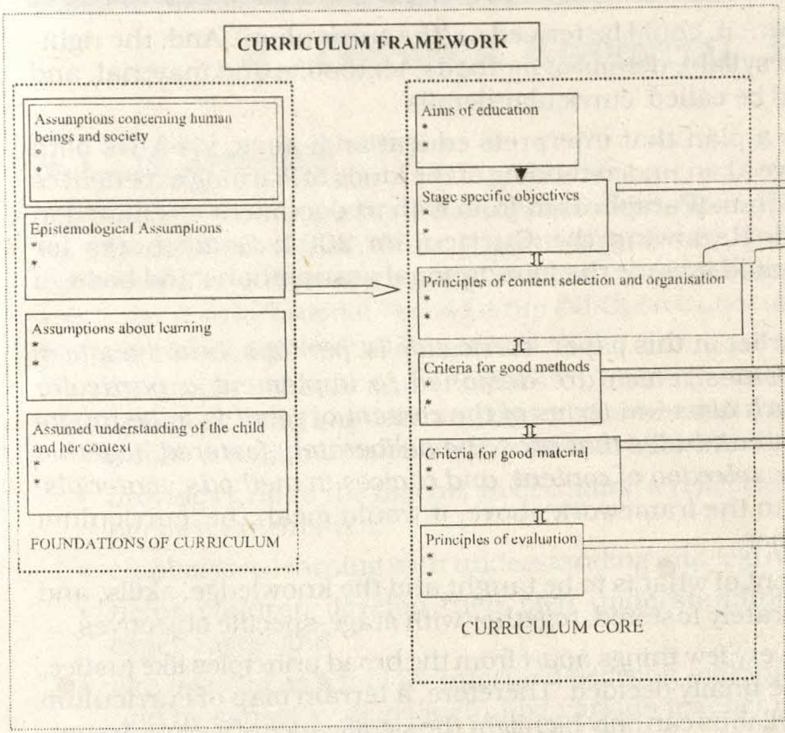
Assumptions about Learning

During the last ten years or so, due to DPEP and several other large-scale programmes, classroom practices and organisation have come into sharper focus. All the positively interpreted loaded expressions like 'activity-based teaching', 'child-centred teaching', 'joyful learning', etc. make use of a host of assumptions about how children learn. Actually, this has been the focus of educational debates in the last decade almost totally bypassing the desirable society and epistemological considerations. A clear articulation of the assumptions about the child and human learning in general should be able to inform the classroom practices better and also show the limitations that psychology alone as foundation of curriculum has. Since this is a well-accepted part of curriculum, we need no further arguments to establish the need for articulation of assumptions about learning.

Assumptions Concerning Children and their Context

All curricular material ultimately is for the teacher to be able to meaningfully engage with the child. That makes it necessary to understand how the child sees the world. The child's worldview, in turn, depends on the life experiences he/she has and the immediate socio-cultural and physical environment he/she lives in. This area involves assumptions regarding the child's nature (here there is a slight overlap with the assumptions about learning) and his/her social context. The social context has its own influence on the ideas about desirable society and how human beings are understood. Thus, this set of assumptions has another significant overlap with assumptions concerning human beings and society. Its main significance is in bringing the immediate socio-cultural aspect in—in other words, contexualisation of assumptions regarding desirable society and psychology of learning.

If one takes this last discussion into consideration, the graphical representation of curriculum framework would be as follows.


CURRICULUM FRAMEWORK
Assumptions concerning human beings and society
Epistemological Assumptions
Assumptions about learning
Assumed understanding of the child and her context
FOUNDATIONS OF CURRICULUM
Aims of education
Stage specific objectives
Principles of content selection and organisation
Criteria for good methods
Criteria for good material
Principles of evaluation
CURRICULUM CORE
Details of syllabus
Recommended classroom practices
Textbooks and TLM
Evaluation scheme
CURRICULUM DETAILS

Such a structure facilitates understanding of the terms 'curriculum framework', 'curriculum', 'syllabus', textbooks and other teaching learning material, and classroom practices in a connected manner. To an educationist who is used to dealing with such concepts, these simple structures perhaps do not offer much, but to people who are grappling with educational decision making at various levels, it can offer help as a tool to organise different elements of education and see connections between them. It also allows one to understand the influence of these notions on each other and, therefore, provides a theoretical background for the debate on flexibility in curriculum, multiplicity of textbooks, and decentralisation.

At this stage, it would be useful to recapitulate what has been said and look at various emerging definitions and relationships. It has been assumed that the central problem a curriculum addresses is that of helping the child to progress from her present level of understanding and capabilities to a desired level in areas that are coherent with the aims of education accepted in the child's society. In other words, a curriculum is a planned/pre-figured coordination between the aims of education and the child's capabilities; therefore, it has to have a well-thought-out direction, reliable routes of progress, and ample flexibility to accommodate unpredictable directions taken by the child's progress and interests, and still retain its direction and broadly planned routes.

In discussion of the problems arising out of this enterprise and attempts to find solutions to these problems, a framework of ideas and concepts has been developed that has three levels of articulation and justification. In the graphical representation of this framework, the left-most block contains assumptions regarding humans, society, knowledge, learning, child, and his/her context. All this put together could be called 'foundations of curriculum'. The middle block, which contains aims of education, curricular objectives, principles of selection and organisation of content, criteria for methods, material and evaluation, could be termed as 'the curriculum'. And, the right-most block contains detailed syllabi, details of methods, textbooks and material, and evaluation system, and could be called 'curricular details'.

Curriculum Framework: It is a plan that interprets educational aims, vis-à-vis both individual and society, to arrive at an understanding of the kinds of learning experiences schools must provide to children. (Paraphrased from a short document circulated in Steering Committee, titled 'Reviewing the Curriculum 2004: Some notes for consideration'.) This plan should include the foundational assumptions and basis of choice for experiences.

Curriculum: As mentioned earlier in this paper, *curriculum is, perhaps, best thought of as that set of planned activities which are designed to implement a particular educational aim —a set of such aims—in terms of the content of what is to be taught and the knowledge, skills, and attitudes that are to be deliberately fostered, together with statements of criteria for selection of content, and choices in methods, materials, and evaluation.* In reference to the framework above, it would mean the 'curriculum core' and 'syllabus' put together.

Syllabus: It refers to the content of what is to be taught and the knowledge, skills, and attitudes that are to be deliberately fostered, together with stage-specific objectives.

In education of a country, very few things apart from the broad principles like justice, equity, democracy, etc. can be finally decided. Therefore, a terrain map of curriculum framework, curriculum, and syllabus can only highlight the significance of various issues, establish connections between different components, highlight the significance of questions raised, and provide hints at different kinds of answers. In short, a conceptual framework can provide a theoretical tool for investigation and coherent debate only.

The component of the suggested conceptual framework that is called 'foundations of curriculum' here is by nature a perpetually contested one. What is a human being? What kind of society do we want? How shall we determine how much progress have we made in the desired direction? What helps or hinders in moving in the desired direction? All these and similar questions admit no final answers. Similarly, there are contesting theories in epistemology and psychology of learning, and various interpretations of contextual differences and understanding of children. Therefore, the foundational assumptions have to be articulated with great care and sufficient generality to provide space for all legitimate variations. This area is a matter of constant debate, study, and discourse. Stating the assumptions here provides a general direction to the debate and can keep the national discourse coherent and intelligible.

One can afford to be slightly more specific in the middle area, curriculum core, where the general notions of human values, stated assumptions in foundational area (in spite of being contested), Indian Constitution, Human Rights declarations, etc. provide a firmer ground for statement of aims and general concerns. The choice of epistemology and psychology we happen to make allow enunciation of general principles of content selection and methods, etc. Therefore, it becomes possible to articulate certain general principles in this area at the central and state levels, with room for interpretations and additions at the district level.

The third component, curricular details, needs to be worked out in concrete terms and in detail as the name suggests. In this block, the syllabus perhaps can be worked out at the state/district level, with provisions for district and school level reorganisation. The methods, materials and evaluation, in the given parameters, should be the choices made at the school level.

4. GROUP'S ESSENTIAL POSITION

4.1 THE APPROACH

The National Curriculum Framework documents have always advocated flexibility in a framework of principles. Other important concerns expressed in the three curricular documents are national integrity, democratic values, and standards of education. In this context, the National Focus Group (NFG) on Curriculum, Syllabus, and Textbooks recommends a curriculum framework that

- facilitates schools and teachers to make decisions about choice of content, pedagogy, teaching–learning material, evaluation, etc. at the school level; in other words, a national curriculum framework for increased autonomy of the school;
- provides help to the teacher in becoming a reflective practitioner who learns from her own experiences;
- emphasises learning with understanding and learning to learn;
- helps children develop their own understanding based on their day-to-day experiences; and
- can be used as a tool for informed decision making by schools and the teachers, and by school systems including various teacher education and administration structures.

4.2 POSITION OF ELEMENTS OF CURRICULUM

4.2.1 The General Aims of Education

I. Aims in Policies and Committees/commissions/reports

Almost all policy and curricular documents on education in India contain some form of aims of education. These are nearly always preceded by an account of national concerns and priorities, and the role perceived for education in nation building. Since 1947, the key policy documents on education brought out are by the University Education Commission (UEC) 1948-49, the Secondary Education Commission (SEC) 1952-53, the Education Commission (REC) 1964-66, Ishwarbahai Patel Review Committee (IPRC) 1970, National Policy on Education (NPE) 1986, Review Committee on the National Policy on Education (NPERC) 1990, Learning Without Burden (LWB) 1993; also three curricular frameworks have been prepared in 1975, 1988, and 2000.

Perusal of the sections on aims of education in each of these documents is revealing. For instance, the UEC states:

> We must have a conception of the social order for which we are educating our youth…our educational system must find its guiding principle in the aims of the social order for which it prepares, in the nature of the civilization it hopes to build….
>
> The outline of social philosophy which should govern all our institutions, educational as well as economical and political, are indicated in the preamble of our Constitution, 'We the people of India, having resolved to constitute India into a sovereign, democratic Republic and to secure to all its citizens: Justice, social, economic and political; Liberty of thought, expression, belief, faith and worship; Equality of status, opportunity; and to promote among all, Fraternity assuring the dignity of the individual and unity of the

nation...We are engaged in a quest for democracy through the realization of justice, liberty, equality and fraternity.'

Under each of these ideas, the Commission introduces a clusters of aims.

The SEC also bases its rationale for aims on the Preamble (and also indicates that school education policy should have preceded university policy!):

India has recently achieved its political freedom, and has, after careful consideration, decided to transform itself into a secular, democratic republic. This means that the educational system must make its contribution to the development of habits, attitudes and qualities of character, which will enable its citizens to bear worthily the responsibilities of democratic citizenship and to counteract all those fissiparous tendencies which hinder the emergence of a broad, national and secular outlook.... It is clear that we have to formulate our aims with reference to these broad categories—the training of character to fit the students to participate creatively as citizens in the emerging democratic social order, the improvement of their practical and vocational efficiency so that they may play a part in building up the economic prosperity of the country, and the development of their literary, artistic and cultural interests, which are necessary for the self-expression and for the full development of the human personality.

Both these documents are significant in that they were the first policy documents on university and secondary education after Independence. Both recognise the need for renewal and re-organisation in the light of the changed political situation in India. Both these documents, in their own ways, pay great attention to aims of education, their rationale, the sources upon which they are to be based, and the broad categories in which they are to be placed. Perhaps this was due to the socio-political energy prevalent in the country that was evolving its first ever free Constitution, perhaps the memory of the struggles that led to this historic moment was still fresh in the minds of the education policy makers.

The REC of 1964-66, which offered the finest statement on how to achieve equality, the key aim of education, by adopting the common school system, is, paradoxically, also the first policy document to blur the clarity of educational aims. The IPRC dismembers aims from school education, looking at it from an entirely different angle: "Having considered the NCERT Framework and keeping in mind the Constitutional Directive contained in Article 45 which enjoins that 'the State shall provide free and compulsory education for all children until they complete the age of 14 years' we feel that the objectives of the compulsory stage of school education must necessarily be distinct from the objectives of education beyond this stage."

By 1986, the NPE offered more angles to the aims. Invoking Constitution, it introduces a notion of common core that would include history of freedom struggle, constitutional obligations, content essential to nurture national identity including value of India's common cultural heritage, egalitarianism, democracy, secularism, equality of sexes, protection of environment, removal of social barriers, small family norm, scientific temper, and equality of educational opportunity. Apart from listing disparate things in a jumbled way, it is important to note that the thrust on self-development that the first two policies were so conscious of, that got re-defined as a 'resource' by 1966, now does not even find mention in the aims. On the one hand, it states that it is committed to equality (for example, women's equality, vowing to redress "accumulated distortions of the past"); on the other hand, it offers a non-formal centre for the less privileged, where children engaged in child labour can learn (if they are not asleep through exhaustion), a couple of hours *after* labour, some alphabet and numbers in the name of non-formal education. Thus in policy documents and commission reports, there seems to be a gradual de-emphasis on articulation of aims.

II. Aims in the Documents on Curriculum Frameworks

All three national curriculum frameworks want to do much of the work that a carefully formulated statement of aims should be doing through variously articulated concerns. The concerns are certainly important, and might even be of immense help in articulating educational aims in a society, but they cannot be readily used as aims in educational decision making.

Again, all these documents talk of objectives of education (the Curriculum for Ten-year School, 1975, talks of stage-wise general objectives, and not for general objectives of education) and produce a long, somewhat disparate, list to serve for such objectives. The list form of aims though is easier to agree upon[5] usually ends up being self-contradictory and is found incapable of providing a rationale for further educational decision making[6]. Such lists cannot help pedagogically because the listed principles are not broad enough and do not carry the logical force of an argument. Socio-politically, they fail to reflect aspirations of all people.

III. Need of and Criteria for Good Educational Aims

Socio-political Standpoint

The aims reflect collective aspirations of all sections of the society and help develop capability to define the kind of social life that is seen as desirable, which should hold good for all in a democracy, and pursue it. That implies certain values. The Constitution is an embodiment of those values as they are understood today. Education has a dual job—understanding and respecting those values and Constitution, and also going beyond and developing a critical appreciation of them. Therefore, though the aims have to be in agreement with the Constitution, they cannot solely be justified on the basis of it. Similarly, the international documents like the Declaration of Human Rights and Child Rights Conventions, though rooted in a broad vision of humanity, (1) cannot sufficiently reflect a specific vision of a particular society, (2) are often used as coercive tools to selectively embarrass or inflict punishment by the international agencies and powers, and (3) again need to be critically reflected upon. Therefore, justification of aims of education has to be rooted in the vision of humanity in the society at the particular time of their articulation.

Pedagogical Standpoint

Educational aims are what make varied activities in schools and other educational institutions part of a pattern and distinguishable as 'educational' in character. An educational aim helps the teacher connect his present activity to a cherished future outcome without making it instrumental at present, and, therefore, give direction without divorcing from the present. Dewey puts it very succinctly: "The aim as a foreseen end gives direction to the activity; it is not an idle view of a mere spectator, but influences the steps taken to reach the end. The foresight functions in three ways. In the first place, it involves careful observation of the given conditions to see what are the means available for reaching the end, and to discover the hindrances in the way." In case of a school this means a careful study of what children at age, say, of 6 years are capable of and what socio-cultural conditions prevail. "In the second place", Dewey goes on, "it suggests the proper order or sequence in the use of means. It facilitates an economical selection and arrangement." For schools, that means making decisions on what to teach and in which sequence. "In the third place, it makes choice of alternatives possible. If we can predict the outcome of acting this way or that, we can then compare the value of the two courses of action; we can pass judgment upon their relative desirability." That would give us the criteria for choice. In this regards Dewey declares, "[T]he net conclusion is that acting with an aim is all one with acting intelligently." (John Dewey, *Democracy and Education*, Chapter 8, Section 1, "The nature of an aim")

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[5] John White, New aims for a new national Curriculum, in The National Curriculum Beyond 2000: the QCA and the aims of ducation, Institute of Education, University of London, 1998.

[6] Rohit Dhankar, On Curriculum Framework, Seminar, ...

IV. What We Propose

The articulation of aims needs to serve the two above-mentioned purposes of aligning the whole educational effort to social aspirations and to provide direction to each individual activity in that total education effort. We have discussed the ground for aims in the section on basic assumptions, and since this document is only to serve as a position paper, here the aims are stated only as principles and no elaborate justifications and/or explanations are provided.

Two-part Articulation:

A: *Values and ideals* education should promote in society, as well as help the learner develop a rational commitment. They are:

- *Equality*—of status and opportunity
- *Freedom*—thought, expression, belief, faith and worship, and as a value in life
- *Autonomy of mind*—as independence of thinking, based on reason
- *Autonomy of action*—freedom to chose, ability and freedom to decide, and ability and freedom to act
- *Care and respect for others*—going beyond respecting their own freedom and autonomy, concern about well-being and sensitivity to all members of the society
- *Justice*—social, economic, and political

Education should help learners to not only cherish these values for themselves but also to respect equality, freedom, autonomy, etc. of others.

B: *Capabilities of individual human beings* that are likely to help in development of values and ideals articulated in Section A above.

- *Knowledge base:* There should be a sufficiently broad knowledge base encompassing all crucial areas of socio-political life, and all basic ways of investigation and validation of knowledge.
- *Sensitivity to others:* Sensitivity to others' well-being and feelings, coupled with knowledge, should form the basis of rational commitment to values. 'Others' should include all life forms.
- *Rational/critical attitude:* Critical rationality is the only way to autonomy of thought and action.
- *Learning to learn:* The future needs of development of knowledge, reason, sensitivity, and skills cannot be determined in advance. Therefore, ability to learn as new needs arise in new situations is necessary to function autonomously in a democratic society.
- *Work and ability to participate in economic processes:* Choices in life and ability to

participate in the democratic processes depend on ability to contribute to the society in its various functions.

- *Aesthetic appreciation/creation:* Appreciation of beauty and art forms are an integral part of human life.

4.2.2 Stage-wise General Objectives of Education

The stage-wise objectives need to be arrived at by keeping in mind the general aims of education, the developmental stages of children, nature of knowledge in general and curricular subject areas in particular, and the child's socio-political context. They cannot be only in the form of subject-specific knowledge. Objectives here would be more of stage-specific interpretation of the general aims of education and, therefore, have to be articulated in terms of capabilities, values, attitudes, and knowledge base in general. The objectives also have to be specific enough to be used as guidelines for content selection and organisation.

Articulation of curricular objectives should also take cue from the statement of aims and could be written in two parts for each stage. The stages should be defined as:

1. *Primary-I:* 2 years of schooling, roughly 5–7 years of age
2. *Primary-II:* 3–5 years of schooling, roughly 8–11 years of age
3. *Upper Primary:* 6–8 years of schooling, 12–14 years of age
4. *Secondary:* 9–10 years schooling, 15–16 years of age
5. *Higher Secondary:* 11–12 years of schooling, 17–18 years of age

There is no need for year-wise division of objectives; stage-wise achievement of objectives would be enough. The syllabus can be further divided, if need be. Though a stage-wise syllabus would give the school and teachers much more freedom and flexibility.

Part one at each stage should interpret the corresponding part of the general aims, say, democratic values, and what form they would take at the end of primary, upper primary, and so on. Part two should state the levels of learning expected to be reached at that stage. These levels should be attainments expected of the part one of the concerned stage.

Curricular objectives for all but the last stage, i.e., senior higher secondary, can be formulated at the state and district level and each school can reorganize them as per needs of their children and teachers.

4.2.3 Principles of Content Selection and Organisation

One of the constant demands faced in curriculum planning is to create new subjects, add new topics, and include material favoured by various interest groups. This is a healthy trend in a democracy as it expresses public expectations from education and sees curriculum planning as a contested area open for negotiation. But this demand can become problematic in the absence of well-defined criteria for content selection and organisation of content in subject areas, and that is the situation we are facing today. Secondly, the problem of curricular load is substantially the problem of a jumbled heap of information in absence of organising principles and conceptual frameworks for investigation and understanding. Both these problems are debated at present more from the pedagogical point of view (the child cannot learn so much at such and such a stage) and from standards' point of view (if our children do not learn this much, we as a nation will always remain backward). The third perspective of social relevance surfaces only in the context of some issues.

The social vision and epistemological considerations have a lot of potential for arbitrating in this debate and that potential remains unexplored. The criteria for selection and organisation of content should take into consideration these aspects as well and should be able to suggest solutions to the above-mentioned problems.

School curricula are usually organised in various subjects. The subjects themselves have their basis in traditions and disciplinary knowledge. Though the subject-based organisation of curriculum is largely accepted, this is also criticised for putting knowledge in watertight compartments, and thereby, fragmentising it. This alluded 'fragmentisation' of knowledge is said to be alien to the child's way of looking at the world and, therefore, is unsuitable for developing a proper understanding of the world in which the child lives. Another related problem is concerned with adequate basis for introduction of new subjects or reorganisation of the existing subject areas.

The issues of what should be included in the curriculum and proper sequencing of what is selected for inclusion are constantly debated. Many consider the lack of clarity on criteria for making choices on these issues as the main cause of increasing curricular load. In brief, the issues of basis of subject areas, inclusion of subject areas in curriculum, selection of content in each subject area and its sequencing, integrated curriculum, theme-based teaching, relative weightage given to subject areas in terms of teaching time and marks allocation, and curricular load are all related to the criteria for selection and organisation of the curricular knowledge.

It is suggested here that the problem of selection and organisation of curricular knowledge should be considered from at least five different perspectives; those of *aims of education, epistemological, child's learning and mental development, and the child's context.* A brief consideration of each of these perspectives in turn would be useful here.

Aims of Education

The issue of what students should know is a direct corollary of what education is expected to achieve for them. In other words 'what is worth teaching' is a derivative of 'what aims are worth pursuing' in education; any justification of what is being chosen for teaching will necessarily involve a reference to the aims the choice in question will help achieve. The aims of education, in turn, are guided by the desirable socio-political (socio-political here is meant to include cultural and economic as well) conditions in a society. Aims of education articulate (a) the capabilities and values of individuals that are thought to be necessary for the desirable society, and (b) key principles of the socio-political vision of the society that education is supposed to help realise. Since, generally there is a set of aims rather than a single aim of education, it also implies that the content should be selected to do justice to the entire set of aims. Therefore, comprehensiveness and balance are important factors in curricular choices. From this perspective, curriculum should select experiences that build a knowledge base, capabilities to think rationally, ability to learn, capacity to work and to participate in economic processes, sensitivity to others, and aesthetic appreciation—suitable for the development of a rational commitment to the democratic values of equality, freedom, autonomy of mind, autonomy of action, care and respect for others, and justice.

Articulation of a criteria at this level of generality, however, cannot provide sufficient guidance at a concrete level. For example, if we take 'development of capability to think rationally', on unpacking, it points to abilities to gather and make sense of information, consideration from as many perspectives as possible, fair amount of proficiency in logical reasoning, ability to spot inconsistency and incoherence, and an attitude to avoid inconsistency. But what specific information, experiences, and principles (knowledge) are likely to help develop these capabilities is still an unanswered question. In order to bring this principle to bear upon the actual task of curriculum development, a host of conceptual tools (information, principles, assumptions) are required. The preceding considerations will provide part of that set of tools.

Epistemological Considerations

The most influential factor in selection and organisation of curricular knowledge is the assumed nature of knowledge itself. Knowledge seen as a bundle of information and a finished product to be 'transferred' to the child's mind immediately demands a set of pedagogically important assumptions. One, it demands postulation of an ultimate storehouse of human knowledge (all the disciplines and encyclopaedias put together). The boundaries of disciplines acquire sanctity based on authority of tradition and masters who created the knowledge enshrined in the disciplines. Textbooks become packages of knowledge specially designed to be transferred in specified time periods, one after the other. In absence of any higher order principles, the increased flow of information becomes daunting, as all that has to find place in the child's mind in a limited time. Together with a perfect recipe for mental confusion, attempts to capture all that information becomes a source of burden, and causes scope for developing arguments as to pushing up new fancy subjects on the one hand and rigid adherence to the old disciplines on the other.

Knowledge seen as a finished product to be transferred into the child's mind also encourages conception of the learner as a passive receptor. Further on, it encourages the thinking that knowledge can be acquired without understanding it, and it can be understood without developing the ability to use/apply it. Therefore, knowledge is reduced to grammatically correct use of certain terms and is shorn of understanding, reflection, and use in construction of meaning.

Alternatively, we can conceive of knowledge as experience organised, mainly through language, into patterns of thought (or structures of concepts), thus creating meaning, which in turn helps in understanding the world we live in. Human beings, over time, have evolved both a wealth of knowledge in this sense, and also, a repertoire of ways of thinking and constructing more knowledge. Each new entrant in the field of human thought has to re-create a significant part of this wealth in her own mind. This is important (a) as a basis for further thinking and for acting appropriately in this world, and (b) as examples to learn to participate in the very process of knowledge creation, constructing meaning, and human action. This conception of knowledge allows us to respect the body of knowledge created together with its principles of organisation and creation, and, still, allows significant flexibility to look for alternative and better-suited principles.

The process of acquisition of knowledge becomes the process of active creation by the learner. The textbook becomes a tool to provide examples, pointers, programmes to be perused, and introduction of principles. The increased information flow becomes an object of interest in the light of general principles to accommodate in the existing body of knowledge, and also becomes a challenge to necessitate re-evaluation of principles and reorganise the existing body to make a better sense of the new information.

Therefore, the increased flow of information becomes illuminating rather than daunting. The burden of non-comprehension can be substantially reduced, and informed choices regarding what to include and what not to become possible with this altered conception of knowledge as the basis.

From this perspective, grasp on the ways of creation of knowledge and its validation, organisation, and bringing to bear upon decision making and action become more important in order to achieve aims of education than mastering a vast repertoire of information. It points to a very dynamic engagement with the world through observing, feeling, reflecting, acting, and sharing as a way of knowledge acquisition.

For the curricular purposes, all capabilities that are important to achieve the aims of education can be organised as follows:

1. *Basic capabilities:* These are capabilities that form the basis of all learning and meaningful participation and experiences in social life.
   (a) *Language:* It provides the basis for all human meaning making and, therefore, creates possibilities of development of understanding and knowledge. It provides the ability to symbolise to codify all knowledge, but claims none of it exclusively of its own. Development of language for a child is synonymous with development of understanding, identity, and largely, particularly after the initial stages, capability to relate with others. A substantial part of practical aspect of performing arts and literature is very closely related to the basis of all meaning making.
   (b) *Relationships:* It could be called social development with some justification, but relating to the natural world and aspects of ones own personality, though might be dependent on social relationships, also have a very special flavour of their own. This is the area of constructing self-identity, relating it with others, emotional richness, sensitivity, and values.
   (c) *Capabilities for work and action:* These are more like a cluster of wide range of abilities drawing upon physical skills, values, and understanding. The practical aspect of fine arts should become a significant part of this area.
2. *Knowledge areas:* They are meant to serve as the basis for developing school subjects rather than be school subjects themselves. Similarly, they are not necessarily coterminous with the university disciplines; the disciplines could be sub-divisions of them, or may be constructed by cutting across many of these forms of knowledge. The organisation of knowledge in these forms rests on difference in nature of concepts, investigation methods and validation procedures used by each one of them. The suggested knowledge areas are:
   (a) Mathematics (nature, validation, implications for selection, and pedagogy)
   (b) Natural sciences (nature, validation, implications for selection, and pedagogy)
   (c) Social sciences (nature, validation, implications for selection, and pedagogy)
   (d) History (nature, validation, implications for selection, and pedagogy)
   (e) Aestheticunderstanding(nature,validation,implicationsforselection,andpedagogy)
   (f) Ethical understanding (nature, validation, implications for selection and pedagogy)
   (g) Philosophy (nature, validation, implications for selection, and pedagogy)

Though this kind of classification can give us a tentative framework to relate what is to be taught to aims of education, and can also help in detecting gaps in our selection of knowledge and experiences, it still cannot formulate either subjects or give clear guidelines to chose content in those subjects. For this much needed clarity, we have to consult the pedagogical choices that we have and the child's mental development at the particular stage for which the choices are being made.

Child's Mental Development

Selection as well as organisation of content is closely linked to the stage of mental development of the child and pedagogy assumed. Possibility of creating the child's interest, level of abstraction and generalisation that a child can handle, etc. all form important considerations. Creation or re-creation of all knowledge needs an experience base, language abilities, association with other human beings, and interaction with the natural world. At the time when the child enters school, this common base for all knowledge is very well developed, but entirely in an intuitive manner. At the first stage in school, then, there may be a greater need for building on this base in a more conscious and engaged manner. The division into subjects here may not be very important beyond recognising place for language and mathematics in organising activities (even of that distinction the child need not be conscious; it would be enough for the teacher to plan in a conscious manner). The rest of the school experience can be totally integrated, if rich enough in interaction, with the natural and social environment. Understanding, doing and aesthetic appreciation all could easily be made parts of this engagement.

One important point in this connection is that the curriculum and the teachers should be aware of the future development of the forms of knowledge, and the learners' experiences should be organised to develop basis for all areas. The learner neither needs to know nor could be expected to be aware that the experiences are chosen with forms of knowledge in mind.

At the primary level there may not be enough conceptual basis for any clear demarcation of sciences and social sciences, but it could be possible to introduce ways of looking at the social and natural world in the form of activities, ways of data collection, and making sense out of them.

Upper primary may be the place for emergence of more clearly defined subject areas, taking into consideration the above-mentioned forms of knowledge. Even here, ethical understanding and philosophy (in the general sense of recognising larger patterns across subject areas, precision in understanding concepts, and looking for justifications for accepting/rejecting claims) should run more across the curriculum than being separate subjects. However, a space for dialogical explorations into social issues and knowledge at this stage could go a long way in encouraging rational thinking.

By the time children reach the secondary education stage, they acquire sufficient knowledge base, experience, language abilities, and maturity to engage with forms of knowledge in their full sense: concepts, structure of body of knowledge, investigation methods, and validation procedures. Therefore, the subjects could be more closely linked with the basic forms as listed above and the disciplines as they are recognised in higher education today.

The issues of adequate representation of all forms of knowledge and emphasis on similarities, special characteristics, and widest possible interconnections between them become important when the subject areas are more clearly defined.

The Child's Context

The child's language abilities, knowledge and skill base, and values and attitude all develop in the process of living in his/her natural and social context. Any possibility of either being interested in or engaging with new ideas and ways of thinking has to be mediated by her existing experience and knowledge base. The curricular objectives in general as well as objectives of different subject areas within the curriculum would certainly admit a great flexibility in choice of what particular concepts, principles, and information should be selected to achieve them. This choice itself has to depend on the concrete examples and experiences that could be made available to the learner. Therefore, the selection of topics within subjects and how they should be taught has to be very much context dependent.

A suggested checklist based on the above discussion:

- Agreement with objectives, and guided by aims
- Agreement with national expectations of learning
- Epistemic priority to understand the nature of the discipline
- Conceptual connections—priority, sequencing
- Investigation methodology and validation procedures—teaching as well as organisation of subject area
- Interconnections between disciplines and relationship to life
- Psychologically appropriate
- Useful in further learning—broadest connections
- Connection with local life and with the rest of the world
- Possible contribution to development of imagination

Criteria should be defined at the national level, structure at the state/district, and selection of individual items at district/school/classroom level.

4.2.4 Teaching–learning Methods and Classroom Practices

Classroom, or any other surrounding where learners are undergoing experiences that help them achieve the desired curricular objectives, is the place where the core of educational activity takes place. As such, the choice of pedagogy is essentially linked with all the aspects that have been discussed so far, i.e., aims of education, curricular objectives, scheme of studies, stage of schooling, knowledge areas, and contents. In addition, it is to be linked to the assumptions about learning based on theoretical and experiential underpinnings, and the social, economic, and age-specific context of the learner. The choice of textbooks and other teaching–learning materials, to be discussed in the following section, is essentially linked to the choice of methods and classroom processes. The basic principles that should guide the choice of classroom practices could be outlined as follows.

Understanding that Children Construct their Own Knowledge

Every individual including children is capable of constructing, and does construct, his/her own knowledge. The responsibility of the school and teachers is to enable this process through appropriate means and processes, and with adequate direction and support. There are several ways of construction of knowledge, and there could be several ways of generating as well as validating the knowledge constructed. Once children are taken through various processes of knowledge generation and validation, they not only develop an understanding at that point of time or relating to that particular content area, but also the capacity to build their own understanding in various other circumstances and situations.

Importance of Experiences in Learning

Experience has an important place in the process of knowledge construction or understanding of a concept. Experience is perhaps the most important step in the process of discovery through which individuals can be made to feel, reflect, and arrive at ideas. An understanding of the experiential base of children is also important in the choice of pedagogy. Relating to what they have already experienced helps in the process of reflection. It is a continuous challenge for teachers to look for suitable ways of 'creating' and 'drawing upon' experiences. New experiences could be organised for children in several ways. It could be through a process of observing something happen (e.g., observing the process of plant germination in a real situation, or observing different stages of milk collection and processing and packaging of different kinds of products in a dairy farm); participating in an exercise involving body and mind (planning a role-play around a theme and presenting that); or going through the mental process of reflecting on something the child has experienced (e.g., dialogue on gender-differentiated practices in the family and society, or participating in a mental game of numbers). Lived experiences, either in the form of exercises that help to relate to life outside the school or in terms of created experiences in the school, have value at all stages of education; only the nature, kind, and complexity of the experiences that the school wants to plan for children need to change over the years.

Active Engagement of Learners is Important for Construction of Knowledge

In order to construct their own knowledge, learners need to be actively engaged. Active engagement refers to engagement of body and mind. A number of physical activities involve engagement of the mind, but some physical activities, especially if those do not require any simultaneous mental application, could also be as unengaging and mechanical (therefore, mentally passive) as copying something from the notebook or blackboard is, or as the process of rote-memorization is. The repetitive acts of copying and rote-memorization do not lead to conceptual understanding and analytical capacities. Playing sports is a good example of simultaneous physical and mental engagement, which involves anticipation, reflection, response, and coordination.

Learners can be actively engaged only when they are motivated to learn. The very choice of work needs to be such that it encourages learners to participate and apply themselves. Active engagement involves enquiry, exploration, questioning, debate, application, and reflection leading to theory building and creation of ideas/positions. This implies that it would be important to create opportunities for questioning, enquiry, debate, reflection, and arriving at concepts or creating new ideas. An element of challenge is critical for the process of active engagement and learning various concepts, skills, and positions through the process. What is challenging for a particular age group may become easy and uninteresting for another age group, and may be remote and un-interesting for still another stage. Therefore, challenge has to be understood in the context of capabilities of children at that stage. Creating or drawing upon experience helps in arriving at abstract conceptions for all age groups of children but the nature of experience as well as level of abstractions would vary. Language is the key to organizing experiences and hence a proper coordination between the kind of experience and the level of language developed would be important in early years of schooling.

Learners' Age

Learner's age and cognitive levels are important aspects that influence the choice of methods and processes. The same topic can be taught at several levels through varied processes having different levels of complexities and experiences.

Individual Child's Specificity

Every individual is unique and therefore the way he/she constructs his/her own knowledge is also unique to some extent. Some children might find a particular kind of process challenging and enjoyable while others might not enjoy it as much, and the level of their engagement could vary. Although it is difficult to respond to each child's preferences in everything a teacher does, it would help to have a broad understanding of the patterns of their thinking and response processes. If the teacher remains flexible and involves children in planning her class work, individual unique abilities of children will bring tremendous richness to classroom processes.

The specificity of a child could also be understood in terms of certain other specific requirements. For instance, children with minor hearing or speech limitations would require special attention and some special devices from the teachers' side. The specificity could be in terms of personality. What would help is a realisation that the needs of individuals could vary, and sensitivity towards that is very important in learning. It also implies that teachers need to address diverse needs in the same classroom, and should be prepared for that.

Variety of Situations and Multiplicity of Methods Important for Creating Diverse Experiences

Different kinds of situations provide different kinds of learning experiences to students. Exposure to a variety of learning situations such as self-work, small group work, and whole class (or large group) work helps in widening the experiential base. It also helps in developing diverse perspectives. Therefore, it becomes important to have opportunities for self-learning, peer learning, and learning through interacting with teachers. The experience of working in diverse situations also helps in developing the skills for, and realizing the necessity of, inter-dependence and cooperation. The experiences of self-learning could help in developing capability for independent action.

Similarly, there could be several ways of enquiry and exploration. If classroom questioning and dialogue could be suitable for something, collecting information through observation followed by processing, analysis, and theory building would be more appropriate for something else. A place for work with hands would also be important in many cases. Similarly, it is also important for learners to be familiar with different forms of expressions, verbal and non-verbal, as well as ideas, and therefore teachers need to create space for opportunities that allow these to happen. It could help to include certain theme-based activities to create opportunities for application of various skills, information, and knowledge to understand different aspects of a topic/concept leading to an understanding and appreciation of the connectedness.

The established principle of 'from known to unknown' is helpful but needs to be interpreted from the learner's perspective. At times, the adult's perspective of 'known' is different from a child or learner's perspective of 'known'. In this context, it would be important to understand that the process of learning is not linear and hence the progression also needs to be non-linear. The relationship between the known and the unknown or between the local and the global is not linear; it is rather complex and web-like in texture. Therefore, a simplistic interpretation can be misleading. The definition of 'known' changes with place, area, age, and needs to be treated accordingly.

Not only the nature of subject or knowledge area and age of the learners but also a number of other objective criteria, including location of the school (rural, urban, remote, and so on) the environment (close to forest, close to water sources, and so on), and the neighbourhood (mixed social group, exclusive caste group, economic and livelihood bases, and so on) determine the particular choice and the combination of the methods. For instance, rural schools could be more resourceful because of their proximity to a variety of flora and fauna to create certain real-life experiences for understanding the environment. The worldview of learners depends on the kind of place they live in and are exposed to, and teachers would need to be aware of that in order to be able to draw upon them. Again, for instance, the issue of water scarcity is a daily way of life in desert areas and has a different significance as compared to water abundant areas.

Time management is a critical aspect of classroom process. Considering that teachers operate under a form of schooling with structures of grade and periods, they also need to decide about the issue of time allocation. The school system largely follows a rigid system of division of 'periods' usually of about 30–50 minutes duration. The rationale of such decision is not clear as different kinds of activities have different kinds of time requirements depending on their nature and purpose. While certain activities or processes can be easily divided without harming the process of reflection and learning, certain others might require a continuous process. The important factors determining the choice should be the facilitation of the desired learning process and the ability of teachers to manage it in the desired manner. Children's attention span depends on the nature of the process and how it is being managed.

Also important is the issue of classroom organization. Although grade-wise organization is the usual practice, the potential for organizing groups of children of different age and level for certain activities could also be considered. A diverse mix of learners with varied learning experiences and levels helps in enabling a process of peer learning, which is not possible in a homogenous group.

The Implications of Aims for Classrooms Practices

The various aims of education articulated earlier have implications for choices being made for classroom practices. The entire organization of the classroom and learning experiences needs to be such that they promote the same ethos, values, and principles. For instance, the aims of promoting equity, democracy, freedom, and plurality through education have to be reflected in all aspects of pedagogy including the method, the teacher–student relationship, and the kind and nature of learning experiences. Learners need to experience what equity entails, what democracy is, how it functions, and what it means to respect plurality in their classrooms. For instance, to provide a simple example, it would be difficult to promote equity and democracy through a classroom where teachers do not allow children to ask questions, where the teacher does not make extra effort to make a relatively silent child speak and participate, and where varying opinions are not encouraged to be voiced and debated, and so on. In other words, democracy or equality is not taught only by covering these as knowledge areas but have to be made part of the regular classroom process. The same principle would apply to other areas also. Certain specific activities could be chosen to break the existing stereotypes in the society, e.g., encouraging girls to play football or do cycling in those parts where such activities are not common at all. A conscious effort for preparing children for action in real life would also be valuable.

The Socio-economic Context and Identity of the Learner

The socio-economic context of the learner has significance for classroom practices. For instance, the economic background of the learners has implications for their health, nutrition level, and also their physical appearance. This could affect their concentration, energy level, and image based on their physical appearance, and all this has implications for their level of engagement and sense of belonging to the class. The teacher should be responsible for making the learner feel comfortable and acceptable in the class, which is one of the first requirements for learning to happen. Similarly, religion or caste forms part of the identity and self-image of most, including young children. The sex of a child too is part of the identity. Social as well as gender relations have power connotations and therefore implications for the learner's self-image, expectations from self, peer relations and also the teacher–child relations. The teacher needs to be aware of these and the impact that these factors have on the child's relations and learning, and have devices that would help facilitate a classroom where each child belongs and feels interested in learning.

What is required is an understanding of these issues and practices, and sensitivity in dealing with the various needs of learners. For instance, if girls are usually not forthcoming in taking initiatives on their own, it becomes important for teachers to create more opportunities for them to speak and express themselves. Similarly, if a *dalit* child in an upper-caste concentrated classroom feels marginalised, teachers need to give greater attention to him/her. In certain circumstances, the issues of gender or caste or any other aspect relating to identity or society can be discussed directly, and sensitively, to initiate a process of introspection and reflection.

Considering that many of our schools are now getting a good number of students who are first-generation 'school students' and therefore do not come from a background where the culture of formal schooling exists, it would be important to understand its implications for the pedagogy. Teachers need to be sensitive to the fact that such children are more vulnerable and, therefore, could be irregular or less-attentive for a variety of reasons: the need to help parents in work, high incidence of illness of self or others at home, and so on. In their early years of schooling, home language could be different from the main language of instruction and has implications for the teaching–learning approach.

Diverse cultural practices should also be looked at as resources. An understanding of these practices would help teachers not only in understanding how to relate to the learners' perspective of the social and physical world around them, but also in building diverse perspectives and in developing a respect for plurality.

An Enabling Teacher–Child Relationship

Even if it means reiterating the obvious, it is important to highlight the criticality of an enabling teacher–child relationship in the process of schooling and learning. The process of learning requires an uninhibited participation and engagement of learners in a process that is largely guided and facilitated by teachers. Teachers' expectations from students has proved to be an important factor in determining their motivation to learn, and consequently the pace and level of learning. However, the conception of a student being 'bright' or 'weak' has a direct association with the learner's motivation, and affects his/her interest level. These notions also often have caste and gender connotations. Teachers need to realize that each individual has the potential to learn and they need to understand how to translate this potential into reality. Therefore, it is important for teachers to develop an affectionate and equal kind of relationship with students, irrespective of their background and specificities.

The Role of and Space for Parents and Community

While school is a structured space for guided learning, the process of constructing knowledge is a continuous one, which goes on even outside the school. Providing some space to community in the classroom processes as part of the curricular plan could help in developing greater coordination and mutual appreciation. Parents or community members could be seen as resource persons for exposure to certain ideas and concepts and could be requested to share some of their experiences with students. For instance, a potter could share his/her skill, machines, and important aspects of his/her work, while a banker could share his/her knowledge about the process of banking as well as the essential features of banking systems in a particular context. The choice would depend on particular curricular plan and the kind of expertise that is available and accessible. What is needed is active involvement of parents in the process of learning. The relationship would help in sharing the pedagogy and the content and thereby in maintaining the continuity.

The choice of desirable methods and practices depends to a large extent on the teacher–student ratio. The national and international experiences have clearly shown that a ratio higher than 1:30 is not desirable at any stage of school education. The Kothari Commission report had also recommended this ratio way back in 1968. The need for adequate and appropriate teacher training coupled with continuous support and facilitation would also be critical for creating an enabling environment and generating new ideas.

4.2.5 Teaching–learning Material and Textbooks

Textbook-dominated Classroom Practices

The present day classroom practices are, in almost all schools of the country, totally dominated by textbooks. All premises of flexibility of the curriculum and syllabus and freedom of the teacher are completely forgotten by the time an educational plan reaches the classroom. The teacher is seen as either incompetent or unwilling or both, the school is seen as devoid of all learning material, and the environment is seen as of no use in the child's learning. The textbook emerges as the single solution to all these problems. It is sought to collect all the knowledge that a child is supposed acquire at a given stage or class and is planned so that the child never needs to look beyond it. Thus 'teaching the textbook' becomes the whole of education.

As a result of this undue importance given to the textbook, it has acquired an aura of supremacy and a standard format. It has to be completed from cover to cover in a strict sequence, has developed a language of its own that is difficult to comprehend, and is laden with dense concepts. (The recent attempts in certain states to tackle this problem have led to writing rather vacuous textbooks with very little conceptual content to understand.) It has become a symbol of authority difficult to ignore or disobey.

Moving from Textbook to Teaching–learning Material

In this paper, we have been talking of a curriculum framework that enables schools and teacher to make choices and move towards greater autonomy. Such a movement towards school autonomy is seen in a positive light by all major policy and curriculum documents. It has also been well recognised that the choices at the level of school and teacher could be made possible only within an accepted framework of basic principles. We have talked about these principles in connection with the general aims of education (nationally accepted), stage-specific objectives (accepted state and district level in agreement with the national level standards for the final stage of school education), and selection of content (at district and school level, in guidance of, perhaps, a state-level syllabus). When we come to decisions regarding methods of teaching, pace of learning, material, and concrete examples to be used, we reach the level of school and the classroom. These are concrete decisions that can be made only for specific classrooms and children, as the actual learning happens only in the child's mind and depends totally on what has been learnt earlier. Therefore, the reinterpretation of the content, methods, and materials are completely within the sphere of practical decisions to be made by the teacher.

Clearly, in the light of this argument, what is needed is not a single textbook but a package of teaching–learning material that could be used to engage the child in active learning. At an early stage, it may contain concrete objects that help formation of concepts (i.e., shapes, counting objects, etc.), equipment to help observation, and charts and cards to illustrate, play with, and so on. At a later stage of school education, it could mean a variety of books on the relevant issues. The textbook as part of this package becomes one tool to engage the child in learning. The teacher in classroom practices can use a variety of activities, concrete learning material, as well as textbooks.

What is to be learnt is planned as per the objectives and the syllabus; what is to be evaluated is decided on the basis of stage-specific objectives. There have been several successful initiatives both in state-run school systems and the NGOs where a package of teaching–learning materials is used and the textbook is either not used at all or used only as one of the materials available. Nalli-kali in Karnataka government schools, Mirambika as one experimental school in a city like Delhi, Schools run by the two NGOs, Digantar and Bodh in Rajasthan, and a few experimental schools supported by CARE-India in Hardoi district of Uttar Pradesh are some such examples.

The textbook itself, as part of such a package, will have to change both in form and function. A textbook may not necessarily cover the entire syllabus of one class/stage and it may not necessarily be for the whole year. Any good textbook should lead the child to interact with the environment, peers, other people, etc. rather than be self-contained. It should function as a guide to construct understanding through active engagement with text, ideas, things, environment, and people rather than 'transferring knowledge as a finished product'.

Context and the Teaching Learning Material

A package of teaching–learning material that relates with the child cannot be developed only with the child's context in mind. No single package, however well and professionally designed, can address all the contextual situations in a country as large as India. Therefore, a large number of packages should be developed at state and district levels with adequate provision for cluster and school-level modifications and supplementary materials.

In addition to squarely contextualising the educational processes, the production of TLM package at local levels will also increase avenues for teacher participation at a hitherto unprecedented large scale. This should significantly enhance the quality of local-level educational discourse, and is likely to improve upon the ownership of material and methods by the teachers.

Multiplicity of Teaching Learning Material

Further, there is no reason why each district or block has to have only one TLM package. Availability of a number of alternative TLM packages, all of approved quality, would certainly increase the choice of the teachers. Such packages could be developed and published by private publishers. Each school or teacher should be able to choose the package of her liking, given that she is committed to achieve the required learning levels and all available packages are of proven quality. Freedom to choose methods and materials is likely to enhance the teacher's self-image and responsibility.

Process of Development of Teaching Learning Materials Including Textbooks

State-run institutions alone cannot develop a large umber of TLM packages and involvement of private publishers would become inevitable. If a large number of TLM packages are to be made available all over the country involving both private and state bodies, it would be important to develop clearly outlined mechanisms of quality control including the establishment of some standards for the very process of development. The government institutions like DIETs should lead the way in developing and establishing such standards. For example, trialling of textbooks and other TLM in a certain number of schools and for a certain time period can be made mandatory for any TLM package that is to be sold in the open market or implemented in a large number of schools. Another such condition could be the participation of practicing teachers in the development process. The DIETs and other government agencies can take lead in fine-tuning and establishing such norms.

4.2.6 Evaluation

Assessment and Evaluation of the Learner in the School

Evaluation, every bit of it—the research, the implementation, the training of evaluators, the evaluation manuals and workshops, the huge buildings full of people devoted to inventing new and even more foul evaluation techniques—in other words, the whole antiquated evaluation process, should as speedily as possible be hurled lock, stock and barrel out of the windows of our educational system in just the same way as the chamber pots were emptied in eighteenth century London, the period and the contents are identical.... Evaluation has been one of the most important forces in the gradual degeneration of all school education over the last thirty years: evaluation with its craze for more and more objectivity in marking, with its endless desire to ensure that children fill their tender minds with numerous snippets of supremely useless information (Who built the Suez Canal? Where is the sun on November 19th? Who was Hare and what do you know about his apparatus?) has reduced education to a kind of gigantic and crazy quiz programme, where the winners get a free ticket to heaven via the IAS and the second-rankers a ticket to purgatory via the IITs and top executive posts; the others, without ranks, can walk—but neither to heaven nor to purgatory.
(David Hosburgh, Year?)

The above quote brings out the havoc that the present system of evaluation creates. The learners are thought of, it could be argued, as being clean slates. The teacher imparts knowledge to pupils, leading them from darkness to light. Many of the trained teachers would have been familiar with the views of various education Commissions as a part of their training in Teacher College, but need frequent reminders of the aims and purpose of education. Most of the teachers live in some fear of inspectorial visits and examination performance should their pupils fail to reproduce the correct facts on being examined. Records of inspectors' visits to schools reveal that drill and repetition comprised the main teaching techniques. The repetition of factual content completely dominates other significant learning elements such as demonstrating, observation, articulation, reflection, sharing, and analysis. The fact that this was not considered desirable was brought out clearly in the Yaspal Committee Report. The report 'Learning Without Burden' notes that the public examinations at the end of classes X and XII should be reviewed with a view to ensure replacement of the prevailing text-based and 'quiz-type' questioning by concept-based questioning. This single reform, it states, is sufficient to improve the quality of learning and saves children from the tyranny of rote memorisation.

To this situation is added the view of the ruling classes and the planners, as is seen in the recommendations of the Viswa Bharati Amendment Bill document, which in fact follows the suggestions of the World Bank that has laid down that for the developing countries, specifically the low-income countries including India, "the development of upper levels of formal education will be selective and carefully planned, taking into account the limited absorptive capacity of the modern sector for labour, and the needs of both the public and private sectors for managerial and technical skills to meet the needs of increasingly sophisticated economies will have priority."[7]

It is necessary to do some soul-searching as to why there are concerns about 'falling standards' and 'high failure rates' among our school going children. Is it not a reflection of the failings of the system of curriculum, syllabus, textbooks, and the teaching–learning approaches we now follow? It is to address these concerns that the approach is further discussed.

The Purpose of Assessment

Evaluation is a relative term. In education, it is always associated with objectives and implementation. By itself, it is a process that determines the course of action and recommends changes for the better of the individual, society, nation, and mankind. If we consider education as preparation for a meaningful life, the process of evaluation followed now, which measures and assesses a very limited range of faculties of mind, is highly inadequate and fails to give a true picture of an individual's abilities or progress towards aims of education.

The first consideration is that there is no need to have a similarity in the evaluation procedures whether in university or primary schools. The evaluation has to be formulated and stated in advance by the teacher and should include all techniques of assessment. Next is that the assessment is a process of collecting, analysing, and interpreting evidence to judge the extent of students' learning, not just the quality of students' achievement, in different domains of learning for the purpose of improving performance and not making a variety of decisions on the levels of learning.

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[7] Education Sector Policy Paper April 1980, p.87.

The purpose of assessment is necessarily to improve the teaching–learning process and materials, and be able to review the objectives that have been identified for different stages of school education. Also, assessment is meant to gauge the degree to which objectives are achieved and capabilities of the learners are developed, and not just to know how many snippets of facts have been memorised. A tailor-made uniform test measuring and assessing the memory and even understanding of the mind of the learner is obsolete and outdated. In the modern times, where creativity, innovativeness, and the development of the entire personality are the hallmarks, we need to redefine and search for new ways of evaluation and feedback.

Lastly, the need for assessment is to give a meaningful report for interschool transfer of the learner, certificate of completion of a course, and periodic reports to the guardians, employers, and community about the quality and level of the learners' progress. It is not a means to encourage competition, and if one is looking for quality attainment then segregating children and injecting a sense of inferiority into them is not the way.

The Assessment of the Learner

In view of generating a meaningful report on quality and level of individual learner's progress, it is necessary to assess each child's learning. In addition to the learner's achievement levels, this should also encompass her attitude, interest, and ability to learn independently. To understand all this, one, of course, has to change the nature of classroom evaluation so that it is based on the very experiences that the learner goes through during learning. The very process of learning is assessed, and decisions are made on the quality and nature of each learner without comparison, classification, or categorization into slow and fast learners. Competency attained or not attained type of judgments or giving only marks or grades based on single observations are not desirable. Observation, especially self-observation, is a powerful tool where a teacher learns a lot about others. Maintaining a daily diary based on observation helps in continuous and comprehensive evaluation. An extraction from the diary of a teacher for a week mentions, "Kiran enjoyed his work. He took an instant liking to the books that were informative and brief. He says that he likes simple and clear language. In noting down facts, he goes for short answers. He says that it helps him understand things easily. He favours a practical approach."

Similarly, methods of keeping records of the child's work, a systematic collection of the ways the learning has improved and grown, as seen in the writing, material produced, and ideas articulated should be included in a statement reporting about the child along with the marks if that is felt to be necessary.

The Use and Nature of Examinations

In our view, the purpose of examination must be an evaluation of well-defined and sensible achievement levels at all stages, and not the test of meaningless transient memory.[8]

Revamping the examination method ultimately is the first and most important step of any meaningful educational change. It needs to be clearly realized that examination determines what becomes of any content and method in practical terms. As long as it stresses on simple recall and the exact repetition of the content as stated in the textbook, all innovations will get frustrated by it.

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[8] Teaching of Science Report and Recommendations of the National Seminar on Science Teaching held at Bhopal, Nov. 15-17, 1985

For a subject based on the objectives outlined at the outset, the examination method must mean an evaluation of not just the achievement levels in the skills and abilities mentioned, but the processes of thinking that the learner uses and whether she knows where the information could be found, how it could be used, and also how to analyse/ evaluate and generate information. The best way to do this is the open-book type examination, which emphasises the application of the child's learning competencies related to thinking and experimenting, involves statistical methods, and is conducted by the teachers themselves. Such an effort has been successfully demonstrated by various small initiatives including the Hoshangabad Science Teaching Project (HSTP). But change in the examination methods is not an easy task, not because of any inherent problems of devising alternate methods, but because of its political implications. It is a great wonder that examination reforms were allowed by the Madhya Pradesh government for the HSTP. The experience in Bombay Municipal schools and the Khiroda experiment shows that both these innovative efforts ultimately floundered because the authorities did not allow examination reforms.

Since examinations are supposed to provide the interface, either with higher education or employment, any change at each stage is linked to what happens at the next stage. As such, a change in the examination method can be effected only if the total educational process is considered as a whole—the IIT entrance examination, the medical entrance examinations, and the PET and PMT examinations of the states are, perhaps, a great stumbling block for any examination reform. A wilful decision by the government to effect a total change in examination is the first and most important step for concerned people to get together to suggest various models for trial, feedback, and final acceptance. It will be necessary to change such entrance examinations in order to make sensible changes in school-level examination. And until that is done, and a will to do so exists, only cosmetic educational changes shall come through, no matter how many 'new' policies of education are formulated.[9]

Comprehensive Continuous Assessment—its Processes and Implications

The present attempts at Continuous Comprehensive evaluation, in which the percentage of marks is based on tests, project work, and assignments, are left to the teacher. The marks given are added to the year-end examination or the external examination held by the Board at the end of classes 5, 8, 10, and 12. Based on these, at the end of 10 and 12 years, the learner is given certification of completion of studies. In order to make the model of continuous comprehensive evaluation effective, there has to be a collective understanding among all concerned–child, teacher, parent, institutions of higher education and employer— about what is being evaluated.

Some suggestions to improve upon the system:

- Strive for excellence in all aspects of learning, especially in the preparation of materials, correction of work, monitoring students' progress, and responding to enquiries by the learners.
- The role of the assessment is to gauge the progress that the learner and teacher have made towards achieving the aims that have been set and appraising how this could be done better. Opportunity for revision and improvement of performance should constantly be available without exams and evaluation being used as a threat to study. Deduction of marks cannot be an alternative to motivating learners.
- The learning experience itself must be evaluated and not merely its outcomes. Learners are happy to comment on the totality of their experience, and this information

can be used to modify the learning system as a whole. The learner must be able to assess her learning experiences both individually and as a part of a group.

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

While reiterating the need to redesign teacher education curriculum and process, as recommended by various Education Commissions, this Position Paper makes a strong case for recognizing the active 'agency' of the teacher in institutionalizing the process of school curriculum renewal. It is argued that the exercise of revising school curriculum with the aim to revitalize school education cannot be achieved without addressing the need for creating reflective teacher practitioners. The following section presents some of the key recommendations with regard to structural and operational mechanisms that will need to be initiated to address issues of teacher education for school curriculum renewal.

1. All types of Teacher Education Program form Pre Primary, Primary, Secondary and Post Graduate should rest with the university.
2. Full Freedom to be given to teacher Educators and student teachers and teachers at school level to do whatever they think fit while implementing new TEP.
3. Teacher Education Programs should be ideally of Five years duration after the completion of 10+2 level of school education.
4. An integrated model for teacher education could comprise of core components that would be common to all teacher education programs (pre primary, elementary and secondary) followed by specialization of professional development specific to the stage of education.
5. The role of national agencies such as NCTE, NCERT and their state level counterparts is of crucial significance in the above stated task. They need to provide well coordinated support and take initiative in caring out such processes they need to encourage individuals and institutions who are willing to take initiative and carry through one or more of these tasks. The main focus has to be on creating a conductive climate in the field for the paradigm shift and generate adequate supportive resources for successful implementation of the new system.
6. Teacher education programs should be redesigned to respond to the school curriculum renewal process and in accordance with the state and regional context in which they are situated.
7. The proposed process model for teacher education presented in this paper should form the basic framework for redesigning teacher education programs at the pre-primary, elementary and secondary stages of education across states and districts in a linkage between SCERT/DIETs with University-based institutions.
8. High-level consultative arrangements between NCERT and NCTE on building linkages between teacher education and school curriculum design and its processes of renewal would need to be developed.
9. A national-wide review of teacher education curriculum in the light of the school curriculum renewal exercise would need to be undertaken.
10. Nation- wide seminars and workshops could be held to initiate discussion and possible strategies for operationalize the institute of redesign teacher education and development.

THE ANIMAL SCHOOL

Once upon a time the animals decided they must do something decisive to meet the increasing complexity of their society. They held a meeting and finally decided to organize a school.

The curriculum consisted of running, climbing, swimming and flying. Since these were the basic behaviours of most animals, they decided that all the students should take all the subjects.

The duck proved to be excellent at swimmer, better in fact, than his teacher. He also did well in flying. But he proved to be very poor in running. Since he was poor in this subject, he was made to stay after school to practice it and even had to drop swimming in order to get more time in which to practice running. He was kept at this poorest subject until his webbed feet were so badly damaged that he became only average at swimming. But average was acceptable in the school, so nobody worried about that-except the duck!

The rabbit started at the top of her class in running, but finally had a nervous breakdown because of so much make-up time in swimming - a subject she hated.

The squirrel was excellent at climbing until he developed a psychological block in flying class, when the teacher insisted he started from the ground instead of from the tops of trees. He was kept at attempting to fly until he became muscle-bound-and received a C in climbing and a D in running.

The eagle was the school's worst discipline problem; in climbing class, she beat all of the others to the top of the tree used for examination purposes in this subject, but she insisted on using her own method of getting there.

The gophers, of course, stayed out of school and fought the tax levied for education because digging was not included in the curriculum. They apprenticed their children to the badger and later joined the groundhogs and eventually started a private school offering alternative education.

TEACHER EDUCATION FOR CURRICULUM RENEWAL

PREAMBLE

The exercise of school curriculum renewal needs to be located and viewed in the policy context of establishing a system of education characterized by certain core values and transformative goals which are consistent with the Constitutional vision of Indian society. Education has acted for many as an instrument of social exclusion, distancing further the constitutional goal of creating an egalitarian and just society. The concern for curriculum renewal emerges from the tenacious character of an education system that continues to view teachers as 'dispensers of information' and children as 'passive recipients' of an 'education' that is sought to be 'delivered' in four-walled classrooms.

One of the key problems in the present crises of education is the burden that it imposes on our children. This burden arises as much from an incoherent curriculum structure that is dissociated from the life and culture of children as from the inadequate preparation of teachers who are unable to make connections with children and respond to their needs in imaginative and dynamic ways. While the articulated need to respect the nature of the child and her pace of learning has carved a legitimate space for the 'agency' of the child, the educational reform process too, continues to deny teachers their rightful place in the education process. Teachers need to be seen as creators of knowledge and thinking professionals. They need to be empowered to recognize and value what children learn from their home, social and cultural environment and to create opportunities for children to discover, learn and develop.

Therefore, the present exercise of curriculum renewal, seeks to prepare teachers differently to address questions of equity and social transformation. Identifying the need to view the teacher as central to the process of change in school education, the Chattopadhyaya Commission notes, "if school teachers are expected to bring about a revolution in their approach to teaching...that same revolution must precede and find a place in the Colleges of education."[1]

This position paper begins with a brief overview of perspective and programmatic directions of teacher preparation as articulated in policy documents and commission reports. This is followed by an examination of current concerns in the field of teacher education based on secondary sources as well as ideas articulated by members during discussions in the Focus Group and by invited stakeholders. These concerns have been articulated in terms of systemic gaps and needs as well as the academic nature and design of teacher education programs and mechanisms. The paper then moves on to a brief collation of some of the innovative practices in the education and professional development of teachers and the lessons that can be drawn from these. Based on these, a vision statement is presented which highlights some of the key points of departure from existing models and practices of teacher preparation. The vision presents a general framework within which the preparation of all teachers can be designed, may it be pre-service or in-service. The last section presents a set of key issues for consideration and recommendations of the Focus Group.

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[1] The Teacher and Society, Chattopadhyaya Committee Report (1983-95). MHRD. GOI. pp.48

PRE-SERVICE TEACHER EDUCATION: A BRIEF OVERVIEW

Teacher education programs have existed in the country for over a century. In the 1850's teacher training existed as an undifferentiated course of study meant for school teachers. Later, on the recommendations of the Indian Education Commission (1884), the teacher training programs were made more differentiated and for graduates the course was designed to be of shorter duration[2]. During the twentieth century, greater differentiation was sought and practiced with respect to the stages at which teachers were expected to teach. Along side, different training modes were introduced, such as regular campus cum practicing school experience, correspondence cum contact programs and the more recent distance learning programs of teacher education. Despite such diversification, the basic features of these programs as well as the theoretical premises have not altered significantly. Although newer concerns, surfacing from time to time have been taken cognizance of, these have not influenced in any major way the main-stream system of teacher education. Teacher education has attracted severe criticism from different sources as documented in policy documents and commission reports on education. A quick glance through surveys of educational research in India conducted periodically over the years 1974-1998 substantiates the point that teacher education programs have remained unchanged in terms of their substance, experiences offered and modalities adopted.

The professional preparation of teachers has been recognized to be crucial for the qualitative improvement of education since the 1960s (Kothari Commission, 1964-66), but very few concrete steps have been taken in the last three decades to operationalise this. This may be one of the more important factors leading to the current poor state of education in the country. The Commission, in particular notes the need for teacher education to be "...brought into the mainstream of the academic life of the Universities on the one hand and of school life and educational developments on the other."[3] It is indeed a matter of concern that teacher education institutes continue to exist as insular organizations even within the University system where they are located. Recognising 'quality' as the essence of a program of teacher education, the Commission recommended the introduction of "integrated courses of general and professional education in Universities...with greater scope for self-study and discussion...and...a comprehensive program of internship."[4]

Subsequently (1983-85), the Chattopadhyaya Committee Report of the National Commission on Teachers envisioned the New Teacher as one who communicates to pupils "...the importance of and the feeling for national integrity and unity; the need for a scientific attitude; a commitment to excellence in standards of work and action and a concern for society."[5] The Commission observed that "...what obtains in the majority of our Teaching Colleges and Training Institutes is woefully inadequate..." "If teacher education is to be made relevant to the roles and responsibilities of the New Teacher, the minimum length of training for a Secondary teacher should be five years following the completion of class 12."[6] Reiterating the need "...to enable general and professional education to be pursued concurrently", the Commission recommends that "...to begin with we may have an integrated four year program which should be developed carefully…it may also be possible for some of the existing colleges of Science and Arts to introduce an Education Department along with their other programs allowing for a section of their students to opt for teacher education."[7] The Chattopadhyaya Commission recommends a four-year integrated course for the secondary as well as the elementary teacher.

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[2] Hunter Education Commission (1881-1884).

[3] Report of the Education Commission (1964-66) Education and National Development. Ministry of Education. GOI. pp. 622.

[4] Ibid. pp.623

[5] The Teacher and Society. Chattopadhyaya Committee Report (1983-95). MHRD. GOI. pp.48

[6] Ibid pp. 49

The National Policy of Education (NPE 1986-92) recognized that "…teachers should have the freedom to innovate, to devise appropriate methods of communication and activities relevant to the needs of and capabilities of and the concerns of the community."[8] The policy further states that "…teacher education is a continuous process, and its pre-service and in-service components are inseparable. As the first step, the system of teacher education will be overhauled."[9] The Acharya Ramamurti Committee (1990) in its review of the NPE 1986, observed that an internship model for teacher training should be adopted because "…the internship model is firmly based on the primary value of actual field experience in a realistic situation, on the development of teaching skills by practice over a period of time."[10]

The Yashpal Committee Report (1993) on Learning without Burden noted "…inadequate programs of teacher preparation lead to unsatisfactory quality of learning in schools. …The content of the program should be restructured to ensure its relevance to the changing needs of school education. The emphasis in these programs should be on enabling the trainees to acquire the ability for self-learning and independent thinking."[11]

IN-SERVICE TEACHER EDUCATION: A BRIEF OVERVIEW

Similar developments have taken place in respect of in-service programs of teacher education. However, it may be noted that the in-service programs have drawn their substance from the emerging needs and concerns of education as faced from time to time. As a result these programs have, at best, been awareness programs in respect of specific concerns and not teacher development programs, as visualized.

As a sequel to the National Policy on Education (1986), orientation of schoolteachers gained momentum on a mass scale. Efforts have been initiated over the past few years to gradually develop a network of institutions like DIETs, IASEs and CTEs with the mandate of providing in-service education to primary and secondary school teachers respectively. So far 500 DIETs, 87 CTEs and 38 IASEs and 30 SCERTs have been set up as teacher education resource institutions in the country. In case of IASEs and CTEs, only a handfull of institutions have started in-service education program for Secondary school teachers. During the last decade the use of satellite interactive television based activities have been provided for teacher up-gradation as part of the SOPT and DPEP projects. The majority of them however continue to perform their legacy functions (NCERT, 2004).

The major indicator of quality of training is its relevance to the needs of teachers. However, most of the training programs are not organized according to the needs of the teachers and the resources are not utilized properly.[12] The transactional approach adopted in majority of INSET programs has so far remained confined to the lecture method with little scope and opportunity for trainees to actively participate in the training process[13]. Ironically concepts like activity-based teaching, joyful learning, classroom management for large size classes and multigrade situations, team teaching, co-operative and collaborative learning which require demonstration and participatory training are also often taught through the lecture method.

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[7] Ibid pp. 49

[8] National Policy of Education (1992) Ministry of Human Resource Development. GOI. pp.43

[9] Ibid pp.44

[10] Towards an Enlightened and Humane Society. Acharya Ramamurthi Review Committee Report (1990) MHRD. GOI. pp.

[11] Learning Without Burden. Yashpal Committee Report (1993). MHRD. GOI. pp 26

[12] Srivastava. ABL. (1999). Study of the support system and process which underpins DPEP's pedagogical strategy in six states: A synthesis report. Ed.Cil: New Delhi.

The potential for radical shifts in the school practices and programs via effective in-service education programs has been acknowledged by most education committees and commissions. They have articulated their concern regarding the neglect and inadequacies of current in-service education practice. The Education Commission (1964-66) strongly recommended that: (i) large scale programs of in-service education of teachers should be organized by Universities and Teacher organizations at all levels to enable every teacher to receive at least two or three months of in-service education in every five years of service (ii) continuing in-service education should be based on research inputs (iii) training institutions should work on 12-month basis and organize in-service training programs, such as refresher courses, seminars, workshops and summer institutes.[14]

The Report of the National Commission on Teachers (1983-85) highlighted the absence of clear-cut policies and priorities for in-service education and lack of systematic identification of needs. It recommended 'planning ahead of time' and 'closer scrutiny of methodologies' adopted for in-service education of teachers. It also recommended that strategies used for in-service education must be 'imaginative, bold and varied'. It further states that 'the most effective among them are the services organized through the school complex. The idea of school complex...put forward by the Kothari Commission...intends to link primary and secondary schools with a view to pulling resources and including the educational process.' The Commission mooted the idea of Teachers' Centres that could function as '...a meeting place for teachers located in a school that has resources that it would like to share with others...it is a forum where workshops of very practical nature are organized for teachers of all faculties and of all levels; it pools in the talent of all teachers of various schools who act as resource personnel for centers' workshops and it arranges book fairs.' What teachers need most '...is a change in the climate of schools, an atmosphere conducive to educational research and enquiry...(select) teachers could be given study leave and sent to advanced centers of learning for furthering their professional competence...through visiting fellowships.'[15]

The landmark National Policy on Education (1986) linked in-service teacher education as a continuum with pre-service education.[16] A Centrally Sponsored Scheme of restructuring and strengthening of teacher education was evolved and implemented. The scheme visualized the establishment of DIETs in each district, up-gradation of 250 Colleges of education as Colleges of Teacher Education, establishment of 50 Institutes of Advanced Studies in Education (IASEs) and strengthening of State Councils of Educational Research and Training (SCERTs).

The Acharya Ramamurthi Review Committee (1990) explicitly stated that "in-service and refresher courses should be related to the specific needs of the teachers. In-service education should take due care of the future needs of teacher growth; evaluation and follow up should be part of the scheme."[17]

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[13] Sethi, Mahindernath. (2001). A study of Management of Multigrade Teaching Practice in Primary Schools of Keonjhar District and the Impact of Teachers Training on Multigrade, Orissa, DPEP, DIEP, Keonjhar.

[14] Report of the Education Commission (1964-66) Education and National Development. Ministry of Education. GOI. pp. 622.

[15] The Teacher and Society. Chattopadhyaya Committee Report (1983-95). MHRD. GOI. pp.48

[16] National Policy on Education. MHRD. (1986). GOI. New Delhi.

TEACHER EDUCATION: SYSTEMIC CONCERNS AND NEEDS

Despite repeated reiterations on the need to strengthen the active 'agency' of the teacher in policy documents and Commission reports, over the last 30 years, Teacher Education programs continue to train teachers to adjust to the needs of an education system in which education is seen as the transmission of information and learning reproduced from textbooks. This continues to be reflected in periodic revisions of curricula framework with little emphasis on revitalizing a largely stagnant teacher education sector.

Need to Enhance the Professional Identity of School Teachers

The poor historical performance of conventional teacher education programs coupled with the dilution of the emphasis on public investment has, since the early 1990s, led to the promotion of several alternative measures of teacher recruitment and training – which have been justified on pragmatic economic and bureaucratic grounds, with little reference to the reality of the Indian classroom. Large scale recruitment of para-teachers within the formal school system[18] and an attitude of resignation towards pre-service programs have become an integral part of state provisioning for elementary education. Such measures threaten to ensure that inequity of access and quality is instituionalised. In many cases, even the minimum qualification stipulated for the recruitment of schoolteachers has been lowered to induct para-teachers. This trend has diluted the identity of the teacher as a professional and has led to a considerable erosion of faith in the agency of the teacher in bringing about change within the government school system and communities. A strong focussed set of interventions will be necessary to reverse this.

Need to establish meaningful links between pre-service and in-service teacher education

Most initiatives of the 1990's have focused on 'in-service' training of teachers at the elementary stage. In-service training of teachers in the DPEP for example, ranged from three to a maximum of twenty days and included a range of topics, with little focus on the teaching-leaning process. "Information on the education of teacher training in the eleven DPEP I and II States is fragmented and imprecise."[19] The impact of these trainings still remains to be understood inspite of a massive infrastructure and investment that went into creating them.

One of the key fallouts of the undue emphasis on sporadic, short-term training of in-service teachers has been the accentuation of the divide that already exists between pre-service and in-service teacher education. These continue to function as insular mechanisms, despite the fact that both coexist in University departments for Secondary Education (IASEs) and are also the joint responsibility of District Institutes of Elementary Education in the country (DIETs).

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[17] Towards an Enlightened and Humane Society, Acharya Ramamurthi Review Committee Report (1990) MHRD, GOI.

[18] Daya Ram (2000) Para Teachers in Primary Education: A Status Report, Ed.Cil, New Delhi.

[19] A Review of Educational Progress and Reform in the District Primary Education Program (phase I and II) South Asian Human Development Sector. Discussion Paper Series, 2003. The World Bank pp 35

A Centrally Sponsored Scheme to establish Institutes of Advanced Studies in Education (IASE) and upgrade University Departments of Education (offering BEd and MEd programs) was established post-NPE 1986 to initiate the in-service training of secondary school teachers. IASEs were mandated to work concertedly on elementary education as well.[20] This objective however is yet to be realized as reiterated in the Tenth Five year Plan for Teacher Education. One pioneering effort in this regard came into effect with the establishment of the Maulana Azad Centre for Elementary and Social Education (MACESE) in the Department of Education of the University of Delhi, as a modified IASE. MACESE is the only IASE that initiated concerted work in Elementary Education, leading to the creation of the Bachelor of Elementary Education (BElEd) Program in 1994.[21] Under the Centrally sponsored scheme DIETs were established as premier institutions to work in elementary education. Evaluation studies reveal that the pre-service and in-service education programs organized by DIETs remain insular with little scope to work at tandem to create the synergy required to revitalize the professional development of teachers.

With little effort to link pre-service and in-service teacher education, the real needs of school teachers remain unaddressed to this date. School teachers, in particular, those in elementary schools continue to remain severed from centres of higher learning and are intellectually isolated. As a result, mechanisms to counter the ideological capture of curriculum development from the teacher community do not exist. This is largely the result of the virtual absence of research and academic support to school teachers. Established mechanisms starting from the SCERTs and DIETs and reaching to the Block Resource Centres (BRCs) and Cluster Resource Centres (CRCs), need to be strengthened to facilitate the exchange of ideas, sharing of classroom practices and the enhancement of knowledge base in terms of content and pedagogical theory.[22]

Need for professionally qualified teacher educators

There are also no established mechanisms to create a professional cadre of teacher educators, especially at Pre-Primary and the elementary stage. Most teacher educators training pre- primary and elementary school teachers for example, are themselves trained in secondary education.[23] Existing programs of Teacher Education, such as the MEd have become, in many Universities, programs of liberal studies in education and are woefully inadequate in facilitating a deeper discourse in education and an opportunity for inter-disciplinary enquiry. These offer little scope for professional development and research in key areas of school education such as curriculum enquiry and design, pedagogic studies, epistemological concerns and issues related to school and society. As a consequence, the dominant ethos of teacher education remains confined to a positivist approach drawn from classical schools of thought in educational psychology and having little contact with a large number of innovative experiments that have mushroomed across India since the 1980s.

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[1] Program For Improvement of Secondary Teacher Education Institutes: Salient Features and Guidelines for Project Formulation. 1987, EdCil. New Delhi.

[2] Working Group Report on Elementary and Adult Education: X Five Year Plan 2002-2007. Department of Elementary Education and Literacy. MHRD. New Delhi.

[3] A Review of Educational Progress and Reform in the District Primary Education Program (phase I and II) South Asian Human Development Sector. Discussion Paper Series. 2003. The World Bank pp 35

[4] Feasibility Study for a Professional Degree Program in Elementary Teacher Education at Delhi University. MACESE. Department of Education. University of Delhi. February 1993. pp 26.

THE DESIGN AND PRACTICE OF TEACHER EDUCATION: UNDERLYING ASSUMPTIONS

The design and practice of current teacher education programs is based on certain assumptions, which impede the progress of ideas and the professional and personal growth of the teacher. These are as follows:

- It is assumed for instance, that disciplinary knowledge is a 'given', which the trainees 'acquire' through general education and which is independent of professional training in pedagogy. This divide is reflected in the common beliefs (even among teacher educators) that a Class V teacher of mathematics need not engage with the discipline of mathematics beyond the 'levels' required for the elementary school. The need to integrate general and professional education, recommended by the Kothari Commission (1964-66) and reiterated by the Chattopadhyaya Commission (1983-85) is yet unaddressed to the great detriment of at least one generation of over hundred million learners.
- Programs of teacher education often assume that the language proficiency (in the language of the medium of instruction) of the student teacher is adequate and therefore need not be the concern of those who train the teacher. Experience indicates that the need to enhance the proficiency of the language spoken by the teacher (may it be English or a regional language) is indeed very real. Courses of language proficiency should form an integral part of pre-service programs, followed by an on-the-job support program.
- It is assumed that repeated 'practice' in the 'teaching of isolated lessons' (of a required number) is a sufficient condition for professional training to be a teacher. It is also assumed that links between theories of child development and learning, instructional models and methods of teaching specific subjects are automatically formed in the understanding developed by teacher-trainees. Both national and international experience challenges these contentions. Teacher education programs therefore must make a conscious effort to design courses to provide greater 'space' to generate a deeper understanding of such linkages.
- Existing programs of teacher education treat the concept of knowledge embedded in the prescribed school curriculum as a 'given'. Student teachers are not expected to examine critically the curriculum framework, syllabi and textbooks because it is assumed that "...there is nothing fundamentally wrong with the school curriculum as a whole or with the syllabi of different subjects. It is also assumed that if there are certain problems in the syllabi and textbooks, nothing can be done about these problems in teacher training. Therefore teachers must learn to adjust to existing realities.'[24]
- It is also assumed that teachers can easily set aside their own biases, beliefs and assumptions about children/learners, knowledge and learning and follow meticulously what they have been 'taught' through methodology courses. Most teacher education programs fail to empower the teacher as an agent of change as they do not provide spaces for student teachers to reflect on their own experiences and assumptions as part of classroom discourse and enquiry. This is a fundamental change in direction that can be facilitated through the NCERT Curriculum Renewal exercise.

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[24] Krishna Kumar. The Vision (2001) The Bachelor of Elementary Education: Program of Study. MACESE. Department of Education. University of Delhi.

- Conventional teacher education programs, train teachers to adjust to the needs of the existing system through (a) the meticulous planning of lessons in standardized formats, (b) the ritual of fulfilling the required number of lessons delivered and supervised (c) the ritual of organizing school assemblies and other routine activities and (d) the rituals of completing the required number of written assignments and projects. "Lesson planning, as it is taught during teacher training is merely a formal routine which masks the acculturation of the young trainee into the profession without disturbing its underlying assumptions about knowledge and curriculum and also without making the new entrant aware of these assumptions and the consequences of the practices based on them."[25]

Exemplars of Innovations in the Education of Teachers: The Basis for a New Vision

Innovative practices carried out in India can be divided in two broad time periods: the pre-independence era and the post-independence era. Innovations carried out in the pre-independence era address the education of a particular stage as a whole. All of them were successfully carried out and have left a rich legacy to learn from.

Innovations in Pre-Independence Era

In 1920 Gijubhai Bhadeka established a set of innovative pre primary schools at Bhavnagar in Gujarat, under the auspicious of Daxinamurti Institute. This movement had a radical impact on the stage of pre-primary education as a whole. (See Box-1)

- In 1921 Rabindranath Tagore established Shantiniketan in West Bengal. (See Box-2)
- In 1937 Mahatama Gandhi launched the scheme of Basic Education for the primary stage of education, in Wardha, Maharashtra.(see Box-3)

All the three are not particularly addressing Teacher Education alone and of Rabindranath Tagore and Mahatma Gandhi are well known, so they have not been elaborately presented here. Gijubhai Badheka's contribution is not so well known so some details have been given hence forth.

Some of the key innovations practiced in teacher education across the country during the post-independence era have been studied to cull out points of departure from conventional teacher education programs. These have been presented in separate boxes. The proposed new vision for the education of teachers provides a framework within which pre-service teacher education and ongoing teacher development programs can be redesigned to create reflective practitioners who would have the promise of bringing about radical changes in the process of schooling for hundreds of millions of our children.

Innovations in Post-Independence Era

They are six such innovations and they are presented in historical order.

- Four year integrated program of secondary Teacher Education, Regional colleges of Education, NCERT (1960s) (See Box – 1)

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[25] Krishna Kumar (2002) Planned Lessons and other problems of teacher training in Reflections on Lesson Planning. IASE. Department of Education. University of Delhi. pp.10.

- One year program of Secondary Teacher Education at Vedchchi, Gujarat (1968 onwards) (See Box – 2)
- Hoshangabad Science Teaching Program; Eklavya, Madhya Pradesh (1972 to 2002) (See Box – 3)
- Miranbika Elementary Teacher Education Program Shri Aurobindo Educational Society – New Delhi (1981) (See Box – 4)
- Four year integrated program of Elementary Teacher Education (B.El. Ed.) faculty of education university of Delhi (1994 onwards) (See Box – 5)
- The "Anveshna Experience" – a participating Teacher Education Program, Department of Education , Banasthali Vidyapith, Rajsthan. (See Box – 6)

Some details about them are put into boxes one by one.

Pre independence Exemplar of Innovations in Education
Gijubhai Badheka Pre primary Education Program
Daxinamurti, Bhvnagar , Gujarat - 1920

Shri Gijubhai Bhadheka (1885-1939) evolved system of education wherein freedom and love for children were core ingredients. He brought the child in the centre of education. He gave the child prime position vis-à-vis the other components – the teacher and the subject. He raised his voice for the freedom of the child and cried out against the use of fear and corporal punishment in schools about eighty five years ago. He started pre-school called Bal- Mandir in 1920 where in he introduced an environment for learning that is friendly and full of love. It was a major break through from the conventional environment.

The very essence of his process of educating the child is to help him to become independent , to have self control and become self radiant Gijubhai gave full respect to the child, his/her thought and also his/her feelings. He employed stories, music, play an educational tools. Children with full attention and interest, learnt the lessons of cleanliness, order, peace to behave with others with good manners, and have love for fellow co-students. He gave full freedom to each child to do whatever he/she likes to do. By establishing Bal-Mandir and carried lots of experiments he evolved knowledge, methodology, tools, literature and what not. By this he virtually revolutionalised the whole gamut of child education. Actually he learnt by observing children and by experiments.

His book 'Diva Swapna' (Daydream) is the road map for revolutionalising elementary education. Where in, how a teacher can revolutionalise the teaching of school subjects like language, history, geography, science etc. and also "teach" cleanliness, manners, larn in group, play for not competition but for joy, to read, to do activities without noise and in order.

He was inspired by Madam Montessori's work. But he adopted her thoughts and methods rendering them suitable to Indian culture. He made a departure from her view about story telling and wrote about books of stories for children.

Rabindranath Tagore Established Shantiniketan - West Bengal - 1921

Rabindranath Tagore (1861-1941) was a genious his contribution was not only confined to arts but overflowed in many constructive channels of nation – building activities. He considered education is most important tool for nation – building. As a pioneer he devoted the best part of this life in conducting valuable educational experiments at Shantiniketan (1921). He weathered all sorts of material hardship and made all kinds of personal sacrifice to make Shantiniketan full contribution in reconstruction of India.

Shantiniketan aimed at creating union of best of cultures of east and west, where all creation of God finds one nest. (Yatra Vishavam Bhavati eka nidam)
He was a great patriot and had acute desire for emancipation of villages and to rouse the villages with Atmashakti to achieve prosperity. He gave much importance to constructive work and village welfare and emphasized self- confidence and self sufficiency in the village. For that many experiments were carried out at Sriniketan.
He was highly dissatisfied with current Westerns Education which he considered education with feable curriculum (of USA or UK) and examination oriented bookish education encouraging rot learning and copying from the books.

He regarded freedom ad play were basic to all learning.

For him the place of mother tongue in education is like mother's breast milk and so medium of instruction should be mother tongue upto higher level. Because he belived that for the purpose of instruction and self- expression the mother – tongue has advantages which no other language can have.

Method of teaching was not to use compulsion and there was a minimum of curriculum in the institute.

Co-education was introduced in those days at Shantiniketan. It was a radical step in those days.

Art had a definite place in Shantiniketan.
His educational ideas were basically molded by his philosophic ideas particularly of Upnishad. The whole universe is a manifestation of one all powerful being, which pervades all time and spare. That is why he saw unity in diversity.

He also believed that there is a divine spark in each and every thing. Which lead Rabindranath Tagore to love every creature and every creation of God. The kernel of his educational concept is the spiritual union between man and nature. He envisaged that children should be allowed to grow in an atmosphere of freedom in the lap of uncorrupted nature.

Mahatma Gandhi Launched Scheme of Basic Education for Primary Stage-Verdha, Maharashtra- 1937

Box 1: Four-Year Integrated Program of Secondary Teacher Education Regional Colleges of Education, NCERT (1960)

The four year integrated program was introduced during the 1960s in NCERT's four Regional Colleges of Education in Ajmer, Bhubneshwar, Mysore and Bhopal. This program was designed to prepare secondary school teachers in the Sciences and Humanities.

Over the thirty-five years of its existence, the scheme of studies of the program has been modified several times which is its most significant innovation. The curriculum was initially designed to develop subject-based competency of the level of graduation along with professional competencies related to methodology of teaching. To begin with, a composite degree of B.Sc. B.Ed. was awarded to the candidates on the successful completion of the course. Subsequently a modification was introduced to award the degree of B.Sc. on the completion of three years to enable students to join postgraduate programs of study in various science disciplines. This provision however led to the exodus of several students at the end of three years. As a consequence the original system of awarding one composite degree at the end of the entire four year program was reintroduced. Subsequently in 1996, the B.A . B.Ed Arts program was withdrawn on the recommendations of the Abbreviated Review of NCERT. The B.Sc. B.Ed. integrated program in the Sciences is still continuing.

The minimum qualification for admission into this program is senior secondary (i.e. 12 years of schooling). The content of this integrated program includes courses on subject knowledge (60%), professional education (20%) and general education (20%), leading to the B.Sc. B.Ed degree.

A number of studies were conducted to examine the effectiveness of these four year integrated program. The key finding is that teachers that emerge from this program are much better than the products of the traditional one-year B.Ed program. The difference in effectiveness is attributed to 'selection of meritorious students, greater length, integrated curriculum along with simultaneous teaching of content and methods of teaching.' In spite of a sound conceptual base, the availability of evidence with regard to its effectiveness and experiences of developed countries and recommendation of several expert bodies, the innovation has not been mainstreamed beyond the confines of the four NCERT Regional Colleges of Education.

Box 2: Secondary Teacher Education Program, Gandhi Vidyapeeth: Vedchichi, Gujarat (1968)

The Vedchichi program of Teacher Education started in 1968 at Gandhi Vidyapeeth, Vedchichi in the Surat district of Gujarat. It is a program of one-year duration and admits 40-50 students each year. Based on Gandhian philosophy, student life on the campus is based on principles of self-help and self-reliance. Students engage in cooking, cleaning utensils, washing clothes and in the maintenance of the entire campus as part of their learning activities to be self-reliant.

Subjects are not taught as independent disciplines, but are woven into specifically designed activities or projects of 5 to 15 days duration. These projects are located I 0020n the surrounding rural areas, thus enabling direct contact with the community. Student teachers assess the basic need of various rural communities residing in different geographical areas. These may range from the problem of drinking water, teacher absentism, problems of health, problems of landless labourers to issues related to developmental projects.

The community benefits from their interaction with student teachers and is able to engage in evolving strategies towards resolution of problems. They engage with new ways and means of maintaining personal and community health and the cleanliness of the village. Specific problems of schools and teachers are also identified and community members engage with the process of finding possible solutions. Often, pertinent issues are taken up for discussion, including ideas of Rabindranath Tagore or any natural or man made event of calamity.

The main features of this program are: learning through participation in activities; self-directed learning followed by group work and group discussion; independent analysis of a problem by student teachers and the practice of self-motivated learning based on experiences.

Vedchchi program has focused on completely on participative process oriented Teacher Education program in Gandhi Vidyapith at Vedchchi.

Box 3: Hoshangabad Science Teaching Program (HSTP): Training Teachers Eklavya, Madhya Pradesh (1982)

Teacher training has always been a very important part of the Hoshangabad Science Teaching Program (HSTP). Every teacher was required to undergo residential training for three weeks every summer for three years. These yearly sessions were interspersed with monthly meetings and follow-up programs in individual schools. The basic philosophy was that every teacher should have done every experiment that children were required to do so that they could have first hand experience of the skills and difficulties every experiment involved; to have engaged in discussions with their peers on the outcome of the experiments so that they could guide similar discussions with their students; and also had a chance to provide feedback on the feasibility of what was being attempted so that the curriculum could be modified accordingly, if necessary. This meant that the teachers worked in groups of four as would their students in the classroom, that they were provided the same kit of materials as their students would use and go through the same processes as their students would undergo. Particularly in the early years of the program this meant that curriculum development was not only the domain of the subject experts but that teachers through the training programs, and later through experiences with students, played a significant role in determining the final shape of the curriculum. This whole process of trial and feedback was important in developing a sense of ownership of the program amongst teachers, which was an important characteristic of the program.

In addition to these activities, which formed the core of the training programs, there were early morning sessions on "laghu prashna" in which participants were asked to respond to questions involving simple scientific investigation or observation that they carried out on the spot. Even during the training sessions, teachers were free to raise any question that agitated their minds. This often led to many animated discussions on various topics such as what is living or non-living, whether life can be created spontaneously, and the accuracy of scientific observations and the errors inherent in them. There were also evening lectures on general scientific matters. These were not directly related to the curriculum but more in the nature of enrichment material intended to arouse interest in scientific matters.

It may be a matter of debate whether or not HSTP succeeded in its goal of improving the teaching of science in government schools, but what was clear to almost all was that there was no chance of the program succeeding in a school unless the teacher bought into the philosophy of HSTP and implemented it in the class room - and the teacher training programs were the single most important determinant in this.

HSTP Program is a unique example of collaboration between the state government and an NGO, in instituting innovative practices in the state school system.

Hoshangabad Experiment is the unique example of collaboration of Government and NGO and achieving high success in Science teaching and Teachers training program which shows the right direction took by the Madhya Pradesh Government.

Box 4: Elementary Teacher Education: An Integral Approach Mirambika, Sri Aurobindo Educational Society, New Delhi (1983)

Integral education is 'education for the whole human being,' in which learning through experience, as a wide, high and a deep process is the basis for development of the potential of each student.

Content: The program aims, through a process of increasing self-awareness, the maximum development of capacities and qualities of the physical, affective and cognitive domains and self-discovery of deeper and subtler layers of one's soul and spirit. Education is seen as a process of becoming, yet it is the respect for the uniqueness of learner that will allow him/her to find his/her own progressive balance in the development of outer life and innermost being.

STUDENT–TEACHERS: PROCESSES *INCLUDE SELF-DIRECTED LEARNING AND SELF-OBSERVATION LEADING THE LEARNER TO CONSCIOUS CHOICES REGARDING STUDY MATERIAL; SELF-REFLECTION AND SELF-EVALUATION.*

Teacher–educators: Processes To ensure self-motivated learning each one of the student-teachers is encouraged to discover personal strengths and weaknesses, a teacher needs to go through a change in attitude related to her/his own professional functioning. *What is required is a shift from being a task master to helper, from instructing to evoking.*

Some of self-directed learning strategies are: *find answers to deep reflective questions; find ways to apply these in daily life; reflective reading; refection on observations in the classroom followed by group discussion. This can be followed by personal reflection and identification of issues for further self-study; presentations that demonstrate assimilation and application; keeping a diary with the aim to look within, identify weaknesses and strengths and work on perfecting these.*

Evaluation: Integral education aims at an assessment that avoids judgment but *gives positive feedback, is diagnostic and helps students to understand what has to be strengthened and identify the next goals in the learning process.*

Experience has shown that when students are given true respect they are remarkably honest about their capacities and limitations. Moreover, self-evaluation is one of the best tools for fostering self-awareness, which is so essential for becoming a good educator.

When a student-teacher learns to take ownership for self development, to find answers and ways that will increase her strengths, deepen her potential qualities and overcome weaknesses; when she has experienced this process everyday she will naturally evoke a similar process in the children in the class and will be able to create a truly child centered learning environment. If true learning could become the guiding principle in the education process, a decisive shift could take place that would make students, educators and the nation blossom.

Innovations carried at Aurobindo Educational Society (Mirambica) emphasis mainly on participative processes but with some lectures and prescriptive type of exercises. It is to be noted that this has been carried out by a well known NGO.

Box 5: Four year Integrated Program of Elementary Teacher Education: The BElEd, MACESE, Faculty of Education, University of Delhi (1994)

The Bachelor of Elementary Education (B.El.Ed.) is a four year integrated professional degree program of Elementary Teacher Education offered after the senior secondary (class XII or equivalent) stage of school. It is currently offered in six colleges of the University of Delhi. Over seven hundred students have graduated from this program and are widely sought in both government and private school systems. Some of them are now teacher educators after completing post graduation in liberal arts, humanities and social sciences.

The (B.El.Ed.) program is designed to integrate the study of subject knowledge, human development, pedagogic knowledge and self-knowledge. The main aim of the B.El.Ed is to prepare reflective practitioners who are socially sensitive. It is an attempt to replace an unquestioning and meek teacher with one who can critically reflect on the 'received' curriculum and 'prescribed' knowledge. It prepares students to move beyond mere textbook knowledge. The B.El.Ed students attempt to initiate their own inquiry, examine ideas in all their complexity and deal with ambiguity. The aim is to develop in students a mental flexibility needed to critically examine and synthesize knowledge from various sources and deal with the complex challenges of classroom teaching. The students learn to engage with issues of subject content, reflect on appropriate methods of assessment and attempt to evolve pedagogy in consonance with the needs of the learner.

The B.El.Ed course attempts to develop the individuality of the student based on the assumption that it is the individual transformation that leads to social transformation. The course structure gives students the space to engage intensely with issues of understanding themselves and others. There is a special emphasis on understanding the nature of the child, the adult-child relationship and its dynamics within the classroom. The students engage with issues of politics of education within the classroom as they reflect on the best way of facilitating children's learning. This course is also designed to develop an understanding of contemporary Indian realities through a study of key historical, political, social cultural and economic issues. Students observe and analyse gender inequities in the process of schooling and develop intervention strategies. The B.El.Ed curriculum is cyclic in nature whereby the same issues are dealt with at different levels of complexity and within different contexts over the four years.

The longer duration of the program offers students critical psychological space to explore and define their own approaches to educational issues as they are in regular contact with the school setting over the four years. There is a sustained 17 weeks school internship program in the Fourth year where students attempt to translate their thoughts into action and critically reflect on this process. Students also visit institutions engaged in innovative practice in elementary education, in order to broaden their horizons. Students undertake research projects with an aim to further develop the process of reflective enquiry through classroom-based research. Through specially designed colloquia students learn specific professional skills like using theatre, art, crafts, story telling and music in education and creating a resource centre in schools.

B. El. Ed. Program of Delhi University mainly emphasizes participative processes along with some lectures and some prescriptive exercises since last 10 years. It is a four year integrated course.

Box 6: The 'Anweshana Experience': A Participative Teacher Education program: B.Ed (Enriched), Department of Education, Banasthali Vidyapith, Rajasthan (1997)

A teacher education program (TEP) is different from any other 'academic' program. The concerns, expectations as well as pressures placed on it as a professional education program are far dense in comparison to those related to academic programs. In operation, however, any TEP is very similar to an academic program in that its curriculum is framed based on a set of assumptions, replete with several instructional experiences, each well chosen, and justified. Within such a structure, students remain merely recipients of knowledge given by teacher educators. The actual quality depends upon the quality of the 'providers' as well as that of the 'receivers'. Experience has it that the school system is but little impacted by such TEPs. It is with such a line of argument that an attempt was made at the Faculty of Education, Banasthali Vidyapith, during the year 1997-98 to create a differently designed TEP. The main aim was to explore the possibility of evolving such a flexible program within the available resource-time frame and of finding out the extent to which the experience becomes 'participative'.

Assumptions

The Anweshana experience believes that there is need for and possibility of providing opportunities during TEP to all student teachers to truly *participate and learn* in one's own way. They should participate not as mere 'recipients' but as learners to evolve *curriculum and its transaction* modes. The nature and number of learning experiences could emerge according to learner needs. Such a program would be *meaningful and enriched* for each student teacher individually. Each would find her own potential and be capable of using it effectively. Organisationally, such an integrative, experiential approach would induce into the TE program greater rigour, avoid redundancy in substantive inputting, enhance assimilation and optimize resource utilization without overstretching resource-time frame.

The **Program** which has been named by the students as "Anweshana" and approved by the NCTE as B.Ed.(enriched), essentially comprises the following:

- *Initiation* involves making decisions as to how to go about independently; gaming, ice breaking; *Sensitisation* comprises several inputs which lead to perceiving ones' own strengths and weaknesses, acceptance of others, significance of teacher roles and their demands and field conditions. Such sessions are more frequent initial phase.
- All other learning experiences comprise the *substantive inputting.* These pertain to the kinds of things -conceptual as well as practical, that student teachers identify as relevant for them to become effective teachers. The modes of interaction are also as perceived as relevant - both collectively and sometimes individually. The teacher educators are there to support, supplement, participate in the group processes and facilitate group's functioning.
- *Appraisal and feedback* comprise several kinds of appraisal acts in the form of self appraisal, peer appraisal, teacher feedback and also formal testing, as and when felt necessary. The university examination is held at the end of the year,

Points of Departure

Evolving curriculum; learner centered; participative; high relevance perception; individual and group decided pace and learning routes; continuous appraisal and feedback; personally satisfying to students; enhanced self-development.

This 'Anweshana' innovation is focusing on completely participative process oriented Teacher Education program for last 8 years.

COMPREHENSIVE TEACHER EDUCATION PROGRAMME: GANDHI SHIKS HAN BHAWAN, COLLEGE OF EDUCATION, MUMBAI UNIVERSITY, MUMBAI (2000)

Gandhi Shikshan Bhawan, an affiliated College of Education of Bombay University offers an integrated B.Ed degree programme for secondary school teachers since 2000. It provides first hand experiences of a slum community. The aim is to make student teachers aware of the socio-economic, cultural traditions of the poor and backward and its impact on the education and development of children. Teachers are educated to develop the conviction and the professional skills to help children come out of such adverse conditions. Such an approach has now become a part of the B.Ed degree programmes of all the Colleges of Education of Bombay University.

On the same line department of education of Jamia Milia has proposed to incorporate the social context elements into teachers training program.

All these innovations compels one to be convinced that drastic and revolutionary changes are possible and the Gandhi Shikshan Bhavan of Bombay and proposed program of Department of Education of Jamia Milia shows the readiness to change the Teacher Education program. But only the fully participative process oriented program should be adapted and that is the need of the day. That can only change education scenario of Indian education.

Teacher Education (TE) : New Vision

An overhauling of TE has become imminent for ascertaining effective and immediate measures to enhance its impact potential. The previous sections of this Position Paper have brought to focus the need for a fundamental change in the 'approach' to teacher education. An attempt is made here to detail the main features of the new approach that the Focus Group visualizes.

The visualization of Teacher Education is titled **'New Vision'** not so much because all its dimensions are totally created a new. But, it is named so because it proposes a definite 'shift' in our view of a TE Program. It is true that there have been earlier attempts, in fact several of them, to 'review', 'revitalise', 'restructure' TE. However, these efforts could not percolate into actual practice and show the expected enhancement in its field relevance.

The Group, therefore, is of the opinion that, in order to make TE vibrant and also responsive to the emerging demands from the field, it is necessary to change (not only the operational or the implementation modes but, more importantly), to make a definite, recognizable shift in the direction to be held, the basic premises or the 'beliefs' that must underlie TE Programs. With this in view, there is a need for change in the 'approach' to TE as suggested hereunder. This suggests a *paradigm shift* in TE.

Vision

Teacher education has to become more sensitive to the emerging demands from the school system. For this it has to prepare teachers for a dual role of

- encouraging, supportive and humane facilitator in teaching-learning situations who enables learners (students) to discover their talents, to realize their physical and intellectual potentialities to the fullest, to develop character and desirable social and human values to function as responsible citizens; and,
- an active member of the group of persons who make conscious effort to contribute towards the process of renewal of school curriculum to maintain its relevance to the changing societal needs and personal needs of learners, keeping in view the experience gained in the past and the concerns and imperatives that have emerged in the light of changing national development goals and educational priorities.

These expectations suggest that teacher operates in a larger context and its dynamics as well as concerns impinge upon her functioning. That is to say, teacher has to be responsive to and sensitive to the social context of education, the various disparities in background of learners as well as in the macro national and global contexts, national concerns for achieving the goals of equity, parity, social justice as also excellence.

To be able to realise such expectations, TE has to comprise such features as would enable each of its learners, i.e., student teachers,

- care for children/learners and who love to be with them;
- who understand children within social, cultural and political contexts;
- who view learning as a search for meaning out of personal experience;
- To understand the way learning occurs, possible ways of creating conducive conditions for learning, differences among students in respect of the kind, pace and styles of learning,
- Who View knowledge generation as a continuously evolving process of reflective learning;
- who do not necessarily view knowledge as an external reality embedded in textbooks but as constructed in the shared context of teaching learning and personal experiences;
- To be sensitive to the social, professional and administrative contexts in which they have to operate,
- Who are receptive and are constantly learning; who own responsibility towards society and work to build a better world.

- To develop appropriate competencies to be able to not only seek the above understandings in actual situations, but also be able to create them.
- Who have a sound knowledge-base and basic proficiency in language.
- To identify their own personal expectations, perceptions of self, capacities and inclinations,
- To consciously attempt to formulate one's own professional orientation this will determine his role as a teacher in situation specific context.

NEEDED FOCUS ON THE NEWLY VISUALIZED TEACHER EDUCATION PROGRAM

It has become imminent that the TE Programs become responsive to such expectations. This is possible through a basic shift in focus to be brought about in TE. This would mean an entirely new direction to be taken for which we should be able to develop necessary conceptual and operational details. Having done so, the existing knowledge and practices could be examined for their suitable inclusion, alteration, or even discard. Significantly, such a new approach to TE needs to have some distinct conceptual and operational focus on several aspects. Major once are dealt with one by one.

Learning

- Learners experience learning through active involvement and participation. By doing these they 'construct' their meanings and ideas, or, in short, knowledge, in their own ways. Therefore, learning is a process of source searching, collation of ideas, reflection and analysis and internalization. This is greatly influenced by the social context from which learners come.
- Learning is a *divergent process* that occurs through various exposures and not necessarily through a common, singular exposure predecided by teacher. It is essentially a participative- process in which learner constructs his/her knowledge in one's own ways, through absorption, interaction, observation and reflection. In the process learner goes back and forth. The process, therefore, is *not linear*; it is rather spiral and complex in nature.
- Learning is not easy and straight forward process. It is a complex and multidimensional and also dynamic process.

Learner

- As the teacher's role is essentially in relation to learner and learning, the central focus of TE has to be on *learner and learning*. Learner has to be seen as an individual with unique potential and living in a socio-cultural context. In this sense, learner is more than a psychological entity, is a vibrant participant in a context. He or she wishes to be an effective participant in the context and also to contribute towards its improvements. Learners recognize meanings from their social cultural contexts, develop attitudes, begin to understand and interpret phenomena in their own ways, based on personal experiences.
- Learners vary in respect of the kinds of learning, style and speed of learning. Given the same conditions, they learn differently. This process is much more than psychological. Teachers need to be able to discern the actual learning in learners, find ways of facilitating it without being prescriptive or without restricting learners' '*learning routes*'. Teacher education must enable teachers to appreciate the learning variations among learners and also that it is a dynamic process.

- Thus learners will be active, collaborative, and aware of their purposes, strategies and context and will be also responsive. Here learner's ability is not seen as a fixed but capable of development through experiences.

Teacher

- The key role of teacher is as facilitator and supportive to learning. Teacher is the one who facilitates learners to realise their potentials, articulate their personal and context specific experiences in ways that are acceptable in the wider context of our nation.
- Teacher has to recognize that in learner centered learning situation. Curriculum 'evolves' and is not 'pre designed'; teacher is merely 'prepared' for possible supports probable expression of learning by learners. Every subsequent learning situation cumulatively provides better insight to teacher in discerning learner needs and, creates pool and identifies varied learning supports. In this sense, teacher is a participant in the learner's efforts at evolving learning experiences and helping to develop program for learning.
- There is no one 'method' that is effective in causing all learners to learn in similar ways. Each teacher has to find one's own 'style' of learning through perceptive practice but recognise the fact that *all learners learn in their own ways*. 'Teaching method' therefore, has two aspects for assessing its effectiveness or appropriateness. One pertains to teacher's style with which she uses method or methods. It relates to one's own rationale. The second is the learner's (school students) way of learning. The participation in unique ways speaks of the role of teacher and learner in the pursuit of knowing or learning. While both Teacher and learner participate in learning situation and they are beneficiaries, acquisition of learning on the part of the student has been a major concern in educational situations. In this sense, technically, they both are learners.
- Teacher needs to recognize oneself as a 'professional' endowed with the necessary knowledge, attitude, competence, commitment, enthusiasm, spirit of seeking new ways and means, capable of reflection, sensitive and perceptive to not only the learners and the institution but also the emergent concerns in the larger social perspective within which one functions.
- Teacher has to recognize that learners in schools no more need teacher as a source of knowledge. The media explosion challenges their minds with the immense learning choices and possibilities. Facilitating meaningful and positive learning in the face of unprocessed information is unavoidable to a teacher. Disparities in access to such a powerful medium are bound to persist for some more time in this country. Teacher needs not only competence to be effective in situations with and without access to ICT, but also the sensibility in leading young learners to understand and accept the situation in a proper context.
- Teacher must develop an understanding of the nature and dynamics of 'action' comprising education. Such an understanding would not be a cognitive acceptance of things that occur but will prompt attempt to 'do' things, contemplate on 'what works and does not work', and critically analyze the pros and cons of the action, reflection and internalization. That is why learning in TE 'readies' one for action independently.
- Terms like teaching and teacher in their earlier meanings need to be altered, if learning has to take the centre stage in TE. That is, teaching has an underlying tone of 'what a teacher does'. This is suggestive of the learning being an outcome of

teaching which is central. Change in visualising teacher, teacher actions and teacher preparedness in a situation whereas learning goes on in learner specific ways, in various levels, speeds and styles but simultaneously, has to be developed.

- It is visulised that providing for learner autonomy will ensure the stage appropriateness of every learning experience. No doubt, the teacher educators need to be oriented to participate in such a learning situation. Also need a good ways of organizing the daily routine during TEPs.
- Teacher educators must not only understand the paradigm shift but also "Own" it. This requires well thought out orientation programs whereat they get opportunity to discuss and understand their role alterations as well as become equipped to deal with learner dominant situations.
- There are a variety of school systems in our country with distinct features and purposes. Yet, they share the broader goals of different stages of school education at the national level. Teacher has to be familiar with these variations and the corresponding expectations they set for her or him. This ensures readiness in a teacher to adjust oneself effectively in any of these school systems one enters and function relevantly.

Knowledge

- Knowledge component in TE is derived from the broader area of the discipline of education and it needs to be represented so. It is thus multi-disciplinary in nature within the context of education. In other words, conceptual inputs in TE need to be articulated in such a manner that they describe and explain educational phenomena-actions, tasks, efforts, processes, concepts, events and so on. In doing so, concepts from cognate disciplines may be used but need to be integrated for arriving at composite understanding of educational components. For instance, different theoretical viewpoints of learning which are essentially drawn from psychology, need to be seen as providing a conceptual basis to teacher in understanding how learning can be understood, discerned, recognized and, more importantly, how it can be caused. That is, understanding of how a given conceptual position a teacher takes influences teacher decisions about creating learning situations is helped by these theoretical explanations. Similarly, the way the ever changing socio-economic-political perspective in the society influences not only teacher perceptions and convictions but also the views and reactions of learners. Such interactive forces continually which may be understood better with the help of sociological and political perspectives. The point of significance is that while formulating knowledge components for techer education conscious effort needs to be made to represent explanations from the perspective of education rather than of other disciplines with 'implications to education'. Instead, attempt must be made to shift from the usual 'theory to practice' to 'practice to theorization'.
- Knowledge in TE comprises of various kinds e.g conceptual, technical, professional etc.

  Differentiating knowledge components in TE would clarify for the beginner, i.e., the student teacher, the educational perspective in which to understand one's working as well as make learning during TE more meaningful and feasible.
- Such a scheme would provide for adequate scope for viewing theoretical understanding and its practical aspects in more integrated manner rather than as two separate components. This enables teacher to develop a critical sensitivity to the field practices, the ones tried out by self and thus, leads to evolving one's own

vision of an ideal learning setting and put forth effort to create it with confidence. Teacher thus equipped would be an asset in creating better learning climate as she would not mechanically accommodate and adjust to existing conditions but would try to improve upon them and also possess the necessary technical know-how and confidence.

Social Context:

- Learning is greatly influenced by the social environment/context from which learners and teachers come. The social climate of the school and the classroom exert a deep impact on the process of learning. Given this, there is need to provide a major shift from an overwhelming emphasis on the psychological characteristics of the individual learner to her social, cultural, economic and political context.
- Different Contexts invite differences in learning. Learning in school is influenced and enhanced by the wider social context outside the school.
- Learning does not take place only inside single institute designed for that purpose. When learning outside is connected with learning inside school it can be hugely valueable.
- Learning is to be appreciated as occurring in shared social and everyday contexts. Ordinarily, many of the ideas expressed by educational thinkers such as Gandhi, Tagore, Gijubhai, Dewey and others are studied with virtually no reference to the socio-historical contexts in which they developed.
- Teacher education Programs need to provide the space for engagement with issues and concerns of contemporary Indian society, its pluralistic nature and issues of identity, gender, equity and poverty. This can help teachers to contextualise education and evolve a deeper understanding of the purpose of education and its relationship with society.

Appraisal

- It is necessary to understand that appraisal of learning is equally a dynamic process with adequate sensitivity and flexibility to gain appropriate estimation of 'actual learning' by individuals.
- Appraisal in New TEP is continuous. Teacher educator evaluates student – Teachers' ability to co-operate and collaborate, investigate and integrate, also appraises written and oral skills and originality in approach, presentation, so on and so forth.
- Several kinds of appraisal take place in the form of self appraisal, peer appraisal, teachers' positive feedback and formal evaluation at the end of the year. All appraisal aim at improvement, understanding ones own strength and weaknesses, to understand what has to be strengthened and identify the next goals in the learning process.
- The appraisal mostly will not be in marks (Quantitative) but on a scale (Qualitative) where in students achievement are evaluated on a continuum and he/she is placed according to his/her performance in various activities.

THE NEW TEP (NEEDED ACTION)

The TE Program such as the one described above needs a few tasks to be undertaken. This requires not a mere rearrangement of existing curricular inputs in TE. In fact, it requires a clear articulation on the substance or the conceptual contours of TE. This needs to be derived from education perspective. Further, it should be recognized that teaching-learning is central in education. No doubt, its operational details emerge from such conceptual framework arrived at. In doing so some significant points of departure are indicated below.

1. The learning inputs in such a TEP will be predominantly learner oriented as it would provide for variety in learning exposures, accommodate differential learning, encourage divergence, reflection and insightful treatment of a learning situation, and also provide for critical examination of disturbing social conditions of learners, larger issues of social disparity, inequity, gender divide and field specific administrative and organizational anomalies – all of which contribute to each teacher evolving one's own conviction about teaching as a profession and a professional commitment.
2. The TE Program has to include teacher competencies beyond the usual oral, verbal ones which are required in the participative learning process. Some of them are —

   Identifying 'sources' of information needed by students to generate learning activities and make them available to learners with differential learning needs:
   - Variety of activities for different learners
   - Reading material for the stage of learners
   - Group and individual problem solving targets
   - Use of study & hands on experience
   - Respond to learners in order to lead them on but not provide 'answers' or solutions
   - Discern learner's logic in the way he/she goes about discovering and support it and
   - Accept divergent responses without judging their 'correctness'
3. Such tendencies mentioned in for going Para develop gradually in student teachers more by experiencing them than by mere reading about them or listening to lectures on them. For this varied exposures which not only enable then to recognize and discern from the field, but also those which provide then with 'Better imaginary' of learning contexts. This is stated because the school experience in most places in the country barely familiarizes student teachers to not very inspiring conditions. That is ' better' schools are more organized than others, but function in an examination oriented way. Therefore, during the TEP it is visualized that through the use of multiple exposures ample opportunities could be provided to student teachers to observe, discern, discuss, try out, understand and learn to make decisions on the 'what and how' of creating learning situations. For this, some very positive , feasible situations will have to be created may be through virtual imaging, exemplar situations from the field or the descriptions along with adequate discussions on the conceptual explanations for these as well as reference work and, of course, actual practice.
4. Organisationally, the new vision TE needs changed arrangements. In the sense, the kinds of curricular details necessary for its implementation may have to be worked out. Greater liaison with schools of relevant stages will be necessary. Transactional emphasis needs to be on divergence not only in the nature, speed and styles of larning by learners, but also in the kinds of expectations as well as facilities provided. The role of teacher educator has to be defined as a facilitator of learning instead of a teacher dealing with a specific course of study. Even for assessment the emphasis has to be on participation quality in the process more

than the outcome. The overall learning setting or climate of the TE Program has to provide an experiential scope to student teachers to explore, reflect, critically appraise, experiment, and own responsibility for one's decision. All these enable them to seek to find these in their schools. Meaningful insights can be drawn from some of the divergent practices in the field as also the insights from other past experience.

5. The feasibility of such a learner oriented, divergent Program is far greater at present in the wake of the easy access to a vibrant and potent mechanism available – the ICT. Use of ICT in meaningful ways makes it easy for teacher to create interesting projects, problem solving situations and virtual exposures to effective learning conditions. In fact, possibility of exposing teachers to effective learning settings created by teachers under varying social, cultural contexts, and texts on success stories can be explored. In places where meaningful school experience to student teachers is difficult this would be a very meaningful exposure especially.
6. The entry of ICT, mass media and the satellite television into the field of education has added to the teacher roles. Participation of several people in creating learning settings demands newer competencies in teacher to take their help meaningfully. The TE Programs need to provide for diversification in getting specialized for different kinds of learning settings.
7. If the TE program under goes changes as visualized then changed practices will lead to substantive and methodological changes which will break new ground. This will also lead to procedural overhauling of the in-service program as the entrant teachers need would be different. In such a situation the issue of "Links between pre-service and in- service TE" will automatically be resolved. It will become a known issue. This will lead to making the in-service programs truly teacher development programs and in that sense, they will be life long education for teachers.

In brief, the new vision TE will be more responsive to changes in school system as it envisages significant paradigm shift. Major shifts can be stated as follows:

Shift from	To
Teacher centric, stable designs	Learner centric, flexible processes
Teacher directions and decisions	learner autonomy
Teacher guidance and monitoring	facilitation of learning
Learning in group	co-operative learning
Learner receptivity	learner participation in learning
Knowledge as "given" fixed	Knowledge evolves
Linear exposure	multiple exposures
Common learning tasks	individualized learning routes
Disciplinary focus	multidisciplinary, educational focus

CONCLUDING REMARKS

Education in post-Independence India has acted for many as an instrument of social exclusion, further distancing them from the Constitutional goal of an egalitarian and just society. Hence, this attempt at school curriculum renewal needs to be located in the context of establishing a system of education characterized by the core values and transformative goals consistent with the Constitutional vision of Indian society.

The focus of many innovations and educational reform of the 1990s was on the need to respect the nature of the child, her pace of learning and carving a legitimate space for the 'agency' of the child. However, the hope of revitalizing school education in India, via an idealistic or an ideologically driven attempt at revising the school curriculum will probably meet with little success, if the central 'agency of the teacher' remains unrecognized.

With this must come, the recognition of the multiple constraints that the average teacher has to cope with: social, cultural, skill and gender-based. The transformation of the capacities, skills, knowledge and attitudes of the teacher and the school environment are pre-requisites for the transaction of an enlightened curriculum and not vice versa, as currently believed.

Enabling this in practice will not be easy, as the unfulfilled promise of revitalising teacher education into a transformative profession has shown. This will require considerable structural and process changes that this discussion paper has sought to outline.

Draft

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EXECUTIVE SUMMARY

"Education is not the filling of a vessel but the kindling of a flame."
— Socrates

Summary of key recommendations of the Focus Group on Exam Reforms **on structural and procedural change**. To be read in conjunction with its recommendations on reducing stress and anxiety among students. (Please note that some of the recommendations below - especially 1,2,4, 7 and 10 — also address the problem of student stress, anxiety and suicide.)

1. Institutions in each field (e.g engineering, law, medicine) co-ordinate with each other and design *one* entrance test applicable across the nation. A nodal agency at the national level is proposed for co-ordinating the testing schedule, ensuring security, and monitoring the timely release of rank-lists. This nodal agency should not, we emphasize, attempt to frame or grade the tests themselves.
2. Under no circumstances should board exams be extended to other grades such as the 11th, 8th and 5th - and news that some state boards have initiated such exams cause us grave apprehension. **Indeed, it is our view that the tenth grade board exam be made optional forthwith.** Tenth-graders who intend continuing in the eleventh grade at the same school, and do not need the board certificate for any immediate purpose, should be free to take a school-conducted exam instead of the board exam.
3. Now, with computerization of registration and grade reporting it is possible to present a wider range of performance parameters on the marksheet - absolute marks/grades, percentile rank among all candidates of that subject, *and* percentile rank among peers (e.g. schools in the same rural or urban block.) The last parameter, in particular, we believe to be a crucial test of merit. Making this information public will allow institutions of higher learning to take a more complex and relativist view of the notion of merit.
4. Requests for re-checks have declined dramatically in states like Kerala, Gujarat, J & K and Karnataka which have given students access to their answer papers (at a charge, of course) in either scanned or Xeroxed form. We laud the efforts of these and other states to make their systems more transparent. One can also be fairly sure that the more casual examiners in these states now do their job more diligently. Greater transparency breeds more accountability. We strongly recommend that all other states fix their systems to provide such access to students, on request, at reasonable (but not subsidized) cost.
5. The practice of forcing teachers to examine is highly unlikely to lead to good examining and should be abandoned forthwith. Furthermore it should be recognized that all good teachers do not make consistent examiners and *vice versa*. If boards pay examiners better - and we recommend a rise in daily wage from the low Rs 100 or 125 per day by a factor of two or three here, not 10% or 20% more - and weed out poorly motivated examiners many of the core problems will get solved. Given that most state boards in India are in very good financial health — one small Northern

state even boasts of an accumulated corpus of 84 crores – finding the money should not be problem. ..

6. Paper-setting needs drastic reform. In fact, as has been successfully tried in Maharashtra (though for reasons of security rather than quality) the focus should shift to *question*-setting from *paper*-setting. It should not be necessary that individual questions are written by experts. Good questions should be canvassed around the year from teachers, college professors in that discipline, educators from other states, and even students. These questions, after careful vetting by experts should be categorized according to level of difficulty, topic area, competency being evaluated, and usage and testing record, and drawn on. After a question has been selected and used in a paper the question-writer should be suitably rewarded.
7. (a) Most real life tasks today, in most professions, call for the ability to ACCESS information, SIFT AND EVALUATE it (for there is a lot of chaff), SORT it and ANALYZE it. These skills can be tested through well-designed multiple-choice questions (MCQs) with plausible distracters. The ubiquitous "short-answer" question usually does not do more than test recall, and can be replaced with good MCQs. MCQs have several other advantages over "short answers":
   - (i) They can be machine-marked, hence are entirely "reliable" and very quick results are possible
   - (ii) Copying problems can largely be eliminated by shuffling of question numbers
   - (iii) Extensive syllabus coverage is possible due to the brief time needed per question

   Karnataka DSERT reports lower student anxiety levels, higher pass percentages, and lower urban-rural score disparities where MCQs have been tried extensively in recent years and now comprise upto 60% of secondary exams.

   (b) Skills of PRESENTING findings coherently, integrating them into a persuasive argument, and APPLYING them to real-life problems are also important. They are best evaluated through essay responses to open-ended questions in languages and the social sciences, and through tiered problems in sciences and maths. The relevant data/ primary source/ passage should be provided in the question paper.
8. By protecting the identity of candidates and examiners from each other a lot of post-exam malpractice can be checked. Maharashtra has successfully implemented a system of encrypted barcodes which hides the identity of the student (and the school) from not only the examiner but also exam board employees. When this is used in conjunction with another method which many states already adopt – randomizing of exam scripts given to any particular examiner – malpractices at the level of the examiner becomes far more difficult.
9. A major source of cheating remains help from outside the exam hall, sometimes even through ingenious means such as mirrors and drums. If candidates are not permitted to leave the exam-center in the first ninety minutes, and even thereafter not permitted to carry out question papers with them most of this can be nipped in the bud. Knight errants on the outside simply would not know what questions to provide answers to.
10. A sensitive teacher usually picks up the unique strengths and weaknesses of students, one should utilize her insight in assessment and empower her, by empower the system of internal assessment. At the same time, to prevent its abuse by schools (as is currently the case in practical exams) internal assessment must be graded on a relative, not an absolute, scale and must be moderated and scaled against the marks obtained in the external exam.

In conclusion, it should be said that the above reforms would, belatedly, usher us into the mid or late-twentieth century, but hardly the twenty-first. In the long term (about a decade) we envision a vastly different system built upon entirely new foundations. This system would actually make the teacher the primary evaluator of her students. This system would not be one-shot but continuous; would extend beyond the cognitive domain and beyond pen and paper; and, hopefully, be seen by all not as a burden but as a tool for further learning. In this system the primary role of boards would change radically – from direct testing at present to rigorous validation of school-based, teacher-based assessment. If any direct testing by boards were still to be needed it would be of a very different type — optional, open-book, and on-demand.

The following pilot programs would provide us valuable data before the long-term changes envisioned above can be implemented. Some are listed below:

Pilot I: Already initiated in Karnataka, to move toward 60% or more of all exams toward the MCQ mode.

Pilot program II: Already existing in Turkey.
A minimalist end-of-school exam. One three-hour 150 MCQ exam covering all subjects studied.
Its sole purpose is to validate the school-given exam grades and to raise/lower them by a moderation factor.

Pilot III: Open-book exams, and source-analysis based assessment.

Pilot IV: The exam system must gradually move toward on-demand exams (they are usually done on-line, internationally) taken when the candidate is ready; rather than at the convenience of the system. We suggest a small beginning of this in computer science exams as a pilot project and its future expansion to maths and physics exams.

INTRODUCTION

EXAM REFORM: WHY IS IT NEEDED?

a) Because Indian school board exams are largely inappropriate for the 'knowledge society' of the 21st century and its need for innovative problem-solvers.
b) Because they do not serve the needs of social justice.
c) Because the quality of question papers is low. They usually call for rote memorization and fail to test higher-order skills like reasoning and analysis, let alone lateral thinking, creativity, and judgment.
d) Because they are inflexible. Based on a 'one-size-fits-all' principle, they make no allowance for different types of learners and learning environments.
e) Because they induce an inordinate level of anxiety and stress. In addition to widespread trauma, mass media and psychological counselors report a growing number of exam-induced suicides and nervous breakdowns.
f) Because while a number of boards use good practices in pre-exam and exam management there remain several glaring shortfalls at several boards.
g) Because there is often a lack of full disclosure and transparency in grading and mark/grade reporting.
h) Because there is need for a functional and reliable system of school-based evaluation.

Each of the above points is elaborated below, in separate sections, with specific recommendations for change pertaining to each. Some recommendations are called for on more than one of the above counts, and this is noted. We have also generally avoided write-ups on issues which fall squarely in the domain of other focus groups. While this report will be frank in its critique, it will avoid bland generalizations and arid theorizing, and focus on concrete proposals for improvement. It will also avoid cluttering the recommendations with cross-references to earlier suggestions for reform: reminders of unimplemented educational reforms have long ceased to embarrass the powers that be.

Exit versus Entrance Exams

We should outline at the outset one criticism of board exams that we regard as unfair. Board exams (especially at the twelfth grade) are often criticized for not adequately serving the *selection* needs of the next level of education; and the blame for the recent proliferation of entrance exams (and for the 'coaching classes' that claim to prepare one for them) is often laid at their door. This critique arises largely from confusion about the purpose of board exams. Board exams are, and must remain, 'exit' exams—whose goal is, and should be, to certify the successful completion of a course of study. (That this certification should be of attained *competencies* rather than memorized *content* as at present, while true, should not distract us from this fact.) Board exams are not, and should not be, designed as 'entrance' exams for professional courses, vocational streams, or whatever. The needs of these post-higher-secondary courses are specialized in nature and require particular proficiencies and aptitudes. Board exams, on the other hand, are designed to test a broad spectrum of learning considered to be essential by the framers of a common curriculum and to certify its completion. The two roles are essentially different. The IITs, the National Institute of Design, law schools, *et al* will design tests to do their job; board exams will do theirs. There is no need for competition between the two. Nor should one set try to replicate the other.

The only plea one can make—and we make this forcefully in order to reduce student stress and fatigue—is that institutions in each field (e.g., engineering, law, medicine) co-ordinate with each other and design *one* test applicable across the nation. Requiring a multiplicity of tests for the same professional stream merely adds to students' stress and is in no one's interest—with the possible exception of coaching classes. We propose a nodal agency at the national level for general co-ordination, preparing the testing schedule, ensuring security, and monitoring the timely release of rank-lists. Getting different end-users of tests to agree on a common core syllabus for each entrance exam should also be part of its function (and this would further cut into the coaching class business). This nodal agency however should *not*, we emphasize, attempt to either frame or grade the tests themselves.

The Long-term Vision for Exam Reform

Finally, it should be noted that what we recommend below are short-term and medium-term improvements to an exam system whose roots lie in nineteenth century colonialism.[1] Ironing out its flaws will bring us, belatedly, into the mid or late-twentieth century, but hardly into the twenty-first. In the long term (about a decade), we envision a vastly different system built upon entirely new foundations. This system would not just pay lip service to teacher empowerment but actually trust him/her to be the primary evaluator of her students (while building in safeguards such as external moderation and scaling by boards). This would also not be a one-shot measure but a continuous process. It would extend beyond the cognitive domain and beyond pen and paper, and, hopefully, be seen by all not as a burden but as a tool for diagnosis and further learning. In this system, the primary role of boards would change radically—from direct testing at present to careful and rigorous validation of school-based, teacher-conducted, assessment. If any direct testing by boards were still to be needed, it would be of a very different type—optional, open-book, and on-demand. Implementing this vision will require a lot of education of all stakeholders, and a lot of re-training. It will need time, and above all it will need strong political will—there are several entrenched interests for which such learner-oriented change would be fatal.

The short-term and medium-term reforms outlined below, therefore, should be seen as important not so much in themselves as for laying some of the groundwork for this more radical long-term change. We recognize that conventional exams can only be dropped when tested alternatives are in place, and we propose, at the end of this paper, some pilot projects for testing these alternatives. Meanwhile, it is imperative that conventional board exams do not extend themselves to other grades. Under no circumstances should board exams be extended to other grades such as the 11th, 8th and 5th —and news that some state boards have initiated such exams cause us grave apprehension. *Indeed, it is our view that the tenth grade board exam be made optional forthwith. Tenth-graders who intend to continue in the eleventh grade at the same school, and do not need the board certificate for any immediate purpose, should be free to take a school-conducted exam instead of the board exam.*[2]

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[1] K. Kumar's *Political Agenda of Education* (2005) argues persuasively for exams being an essential constituent of the British colonial ideology, with its need to disempower the (Indian) teacher while lending weight to the prescribed textbook and exam structures. Eric Stokes's classic *The English Utilitarians and India* (1959) shows how India and the Indian education system was used as a laboratory by Mill and others to test the efficacy of competitive exams as tests of merit *before* they were used in Britain.

[2] This recommendation is elaborated in the section on relieving student stress and anxiety.

PART (A): THE LEARNING IMPERATIVES OF THE NEW KNOWLEDGE SOCIETIES

It is now almost a cliché to assert that the education needs of today and tomorrow are vastly different from those of the 19th and 20th centuries. But ideas usually become clichés when they *are* true. School education in the colonial era was designed to produce clerks for the bureaucracy.[3] What was taught, and what exams rewarded, was conformity and mastery of prescribed, narrowly defined content usually learnt from a single text. A questioning attitude was dangerous, and the teaching of skills other than those needed by the colonial state superfluous. After 1947, school education was extended to a wider population (though, arguably, not wide enough) and the content prescribed was partially modified to cater to the perceived needs of both nation building and the new industrial economy.[4] But knowledge remained scarce and was viewed as such. Hence, the primary goal of education remained that of disseminating it through prescribed textbooks and the prime purpose of examinations was to test the success of such transmission. The simultaneous processes of nation building and the creation of an industrial working class required homogenizing, and hence did not put a premium on differentiation or flexibility. And the welfare of the individual learner was subordinate to this political and economic enterprise.

Much before the dawn of the new 'knowledge society' in the 1990s, however, this educational model was already under stress. Contrary to expectations of early state-planners, it was the service industry rather than manufacturing that steadily grew to dominate the Indian economy and became the biggest source of new jobs. By definition the service economy involves catering to other people's varied needs in a flexible and differentiated manner—be it in hospitality, retailing, transport, insurance, or any other sector. And if standardization is the key to success in manufacturing, differentiation is the key to success in the service sector. If consistency is a key quality of an industrial worker, problem solving and lateral thinking are key qualities in a service provider (even at the humble level of a table-server). In the latter, one size manifestly does not fit all. And it calls for a very different philosophy of education.[5]

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[3] This is, of course, the traditional view. It is challenged by Kumar (2005), who argues that the 'civilizing' motive was paramount. While no reader of Macaulay's famous *Minute* would doubt the genuineness of this *intent*—of creating a class of elite Indians who would be at least as British as the British in their world-view—Kumar takes the argument further. He argues forcefully that, even in terms of *outcome*, not clerks but creative thinkers (such as the first generation of nationalists) were produced.

[4] Ironically, given the nature of the new Indian democracy, there was a greater need for clerks to staff government offices in the decades immediately after independence than ever before in the colonial era.

[5] At the political level, likewise, the celebration of regional and linguistic diversity soon took prominence over a homogenizing nation-building model.

[6] Internet initiatives like ITC's *e-chaupal* and those of M&M may soon make it worthwhile even for the farmer to acquire its rudiments.

The new 'knowledge economy'—in which India has emerged as a key player and in which, beginning with Rajiv Gandhi, its leaders have placed great transformative hopes—has put the old 'transmission of scarce knowledge' educational model under even greater stress. The Internet has demonstrated that information, even useful information, is *not* scarce—indeed it is freely available, often in overwhelming quantities, at the click of a mouse. What is needed is skilled processors of this information—people who can *access* it, *sift* and *evaluate* it (for there is a lot of chaff), *sort* it, and *analyse* it. Skilled workforce is needed to identify or deduce relationships within what seems like scattered and unrelated data. Finally, the findings need to be *presented* coherently and persuasively, and their *application* to real-life problems demonstrated. For those who can thus convert raw data into useful knowledge, jobs are there for the asking, here and overseas.

Two hoary myths persist on this issue and need to be addressed. The easier one is embodied in a question posed by a member of another National Focus Group: "What world are you living in? This bubble burst in 2000." With all due respect to this august personage, we believe that it did *not*—though we accept that, while its contribution to the India's economic growth and foreign exchange generation is now significant (and growing fast), its significant presence has yet to be felt across much of India, especially outside peninsular India and outside urban India.

It is slightly harder to show that the imperatives of the new knowledge society extend well beyond the world of software engineers and BPO professionals. It should be stressed that much of the process outlined above—the search and sifting of raw data and its step-wise conversion into useful knowledge—is now at the heart of several traditional professions. Nor is it limited to elite professionals, such as managers, business consultants, doctors, researchers, economists, and journalists. Pharmaceutical and used-car salespersons, real-estate agents, travel agents, advocates, couriers, retailers, and, of course, personal secretaries—all require these skills to a substantial degree.[7] It is for this reason that we have used the term 'knowledge societies' in the plural rather than the singular. These 'societies' or professions may have nothing in common other than the commonality of this process of 'information-sifting and evaluation'. Whether one calls this *analytical thinking, critical thinking, lateral thinking*, or *problem-solving* does not matter. (Indeed the skills needed are a composite of these.) The point is,that most of these types of thinking are required in most occupations today. *Yet we are hard-pressed to find a single one of these activities being required of exam candidates in Indian schools today*, let alone such a composite.

The negative impact of this is already being felt—in a scarcity of skilled personnel. How well are we doing in producing these problem solvers or lateral thinkers by these new and traditional industries? Let us turn to the quintessential problem-solving profession, one that Indians have done well in—software programming. NASSCOM predicts that there will be shortfall of several lakh computer programmers by 2010, and that this is the single-largest hurdle the industry faces. Further inquiry reveals the reason. In a recent interview, S.A. Deshpande, head of training and recruitment at one of India's very large software companies, has this to say: "19 out of 20 graduate applicants and 6 out of 7 post-graduate applicants are unemployable. They simply lack the requisite problem-solving skills or often even any real clue as to what problem-solving means." She continues: "We don't really need engineers as programmers. We could even hire high-school dropouts if they had the right skills. We tend to hire engineers because they, unlike most other graduates, have usually learnt problem-solving along the way." If a country of over 100 crore is struggling to produce one lakh youth a year with these problem-solving skills, all is clearly not well with its education system. Nor is there much point in merely blaming college education. There is a good amount of psychological theory to suggest that if you want inquiring minds who can 'think out of the box' at the age of 21, you cannot begin to create them at age 17. You have to begin at 7, or at least at 11.

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[7] And even this "passing" is not occurring. No less than about 60% of tenth-grade candidates and about 40% of twelth grade candidates do not clear their respective exams.

We have stressed the *economic* importance of creating problem-solvers and rigorous thinkers because education, more than anything else, has the potential to cause upward mobility. And, in turn, well-educated manpower (and womanpower) has always been a pre-requisite for rapid productivity gains. But even if there were no *economic* benefits most polities and civic societies, at least within democracies, would welcome the creation of a citizenry with a keen, questioning mind, able to judiciously process information for itself. Within the specific Indian context, it is hard to imagine the State making much headway against problems of poverty, patriarchy, and caste discrimination without large sections of its citizenry possessing such analytical and critical skills. Likewise, a lot of the solutions for India's complex social problems will need to come from creative visionaries working singly and collectively. Are our education and exam systems working to create such 'problem-solving' citizens?

PART (B): BEYOND PRODUCING CLERKS: EXAMS AND SOCIAL JUSTICE

Education remains the primary engine of upward economic mobility. Due to the pioneering entrepreneurial efforts of a few in Bangalore and Hyderabad, India is today uniquely poised to become an intellectual powerhouse in the new 'knowledge' era. Pharmaceutical and biotech research, consulting, and of course software development, all promise hundreds of thousands of high-paying and fulfilling jobs—if, however, the Indian education system can produce students with the required skill-sets and attitudes. In particular, it would have to tap students in small towns and rural areas—not merely because a larger number of 'knowledge workers' will be needed than big cities could produce *but because social justice demands that the rural and small-town population be given (howsoever belatedly) the opportunity to benefit from the newer engines of economic growth.*

This is an immense challenge that the Indian education system faces, and we must tackle it with fresh thinking. We must discard the mandarin mentality—one that masquerades as progressive but is actually colonial in its quest. This mentality is epitomized by the remarkably candid question posed by the Education Secretary of a western state of India, after the Chair of this Focus Group had made his presentation. 'Who, then, will produce the clerks?' the Secretary asked. Lord Macaulay would have smiled from his grave.

A more serious objection (raised by a school principal in a rural part of Pune district) deserves more careful consideration: "Today's board exams cater to all sections of the population—including those who are poorly taught, in schools without adequate facilities. How will he cope when asked to solve a problem on the transfer of momentum rather than just defining it? Won't more students fail? Won't more drop out?" The question is crucial. It assumes that excellence and equity are at odds; that the former must occur at the expense of the other. Before we attempt an integrated solution in the subsequent sections, a few observations are in order in an attempt to think beyond the 'equity vs excellence' polarity.

We believe that to teach skills and create excellence, in hitherto neglected backwaters, is the way—perhaps the only sustainable way—toward real equity. Disadvantaged regions and groups are not being done a favour when pass certificates are handed out that get them nowhere—neither to a job nor to success at university.[7] Educators should feel good not when students from disadvantaged groups and classes and regions get 'pass' certificates, but when these certificates open doors to well-paying, high-skilled, satisfying jobs that permanently raise them out of poverty. (Today this is not the case, and, frankly, can one really blame employers?) We owe it to these disadvantaged regions and groups to *teach them the skills needed to succeed in today's world*. The real losers in a system that does not teach practically useful skills are these disadvantaged groups—the privileged will usually absorb these from their environment anyway. In the name of equity, let us not perpetuate inequity.

A system of education and examination that teaches members of disadvantaged groups the requisite problem-solving and analytical skills needed by the job market is vital. Memorizing and regurgitating textbooks is not a skill needed by the job market. An exam system that encourages this type of 'learning' snuffs out creativity. As the National Advisory Committee on 'Learning Without Burden' opined:

> Board examinations, taken at the end of Class X and Class XII, have remained rigid, bureaucratic, and essentially uneducative... and mainly a source of awe because of the amount of information they demand in a manner ready for instant recall.[8]

We will suggest below that such exams not only snuff out the joy of learning but, by doing so, encourage 'dropping out' and are, therefore, economically regressive.

Exams and learning systems that require rote are unlikely to stimulate students, create interest in them to attend, or make them feel that they are learning skills useful to their later life. True learning takes place only in an environment where people feel challenged. As Socrates noted, "Education is not the filling of a vessel but the kindling of a flame." The trick is to kindle the flame, and the student will remain motivated. On the other hand, an exam system forcing students to memorize a plethora of facts, from an unattractive, dry-as-dust textbook—facts usually divorced from any conceptual framework and certainly from their frame of reference and experience—is unlikely to keep them attending. Has the system made an attempt to reflect and authenticate their frame of reference or to work through their distinctive worldview? Or has it merely tried to stuff some half-digested information from an alien context down their throat? The vast majority of textbooks prescribed by educational boards do precisely this. Yet we tend to attribute dropping out to 'learner disinterest', subtly shifting blame onto the learner. Could it be that the blame for this disinterest lies more with the system than with the learner? That it lies with a system that failed even to *attempt* to kindle a flame? Could it be that *a more challenging regimen but one rooted in the students' realm of experience* would have been more stimulating, kept them coming, *and* hence led to their learning lifelong skills? (Multiply this by a couple of hundred million and we have

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8 Government of India (1993). *Learning without Burden*. Report of the National Advisory Committee appointed by the Ministry of Human Resource Development, Department of Education, New Delhi, p .17.

laid the foundation for rapid upward economic mobility *and* higher quality of public life and creative endeavour.) If we accept this possibility, excellence and innovation in school education do not stand in the way of equity—indeed it would be impossible to imagine equity without a renewed quest for educational excellence and relevance.

Of course the teaching of skills, and teaching the teachers who will teach these skills will not be easy. It will require resources, careful planning, a careful roadmap, and hard work. It will also mean trying to truly connect with students whose lived experience is diverse and different. Hence, it will require decentralization—of curricula, textbooks, and exams. The task is daunting but there is no other path. It must be done if the country as a whole, rather than islands of excellence here or there, is to move forward.[9]

PART (C): WHAT DO BOARD EXAMS TEST?

Though fairly *reliable* tests of narrow textbook content, Indian school board exams are rarely *valid* tests of desired competencies and broader curricular objectives, even within the cognitive domain.

The core of the exam system is the exam paper. This may seem almost a tautological assertion but, given the lack of attention paid by most boards to the quality of the actual exam paper, it is necessary to make it. While actual exam administration and security and release of results have improved in recent years across most boards—mass cheating is down due to more flying squads, most boards release results within 45 days of the end of the exams, etc.—the *question papers themselves remain seriously problematic* in the following ways:

1) Repetition of identical (or very similar) questions from year to year (hence playing into the hands of coaching classes)
2) Ambiguous phrasing of questions or questions phrased as 'Write a note on…' (both of which require students to pour out all they remember from the textbook on that topic)
3) Inordinately lengthy (perhaps in an attempt, usually vain, to 'cover' all chapters of the textbook), hence allowing little time for actual thought, and discriminating against thoughtful reflection
4) Designed to test a detailed knowledge of the textbook (including trivia and/or errors within it) rather than competencies and core concepts

Question paper sets from the most recent (March 2004) 10th and 12th grade exams were collected for detailed study. Attention was focused on paper sets from five boards popularly perceived to be the best in the country. The exercise was an eye-opener. Listed below are samples of the deficient questions, grouped according to type of deficiency: *missing the forest for the trees*, i.e., (a) zooming in on non-essential information or transient information, or (b) information that is incorrect or purely a creation of the textbook writer.

There should be a shift away from 'short answers' usually requiring little more than familiarity with often-obscure and peripheral statements in the textbooks, e.g., *What is the weight of the pituitary gland?* As the concerned Bangalore father who cited this example rightly explained, the gland should be studied for its crucial function, perhaps even for its structure, but hardly its weight! It is perfectly acceptable for the textbook to mention how small this crucial gland is (though even this could be done better by comparison to a pea than by saying 0.78 gm). But it is not proper for the examiner to call upon this fact (if indeed it is one, we suspect the weight of the pituitary glands among members of our group would vary within a fair range). Examples from 2004 papers in the same category include the following.

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[9] Some other reforms such as the award of a percentile rank with respect to peer groups, e.g., all students in the school and all students in a block, would, by highlighting student achievement in its proper context, also aid the cause of social justice. These are dealt with in subsequent sections.

Who were the parents of Benito Mussolini? (0531)—irrelevant—and *How many members are there in the U.N.O.?* (GSY 59/3)—transient.

Who was called Modern Messiah? (0562) was a question asked in a 10th grade History and Civics paper. The term 'Modern Messiah' was employed by the textbook writer (perhaps to describe Karl Marx—though it could have been Gandhi) but has no wide currency outside the textbook. A tenth grade geography question—*Describe the method of irrigation prevalent in India* (0563)—takes as a given fact that there is only one such method in India, perhaps because the textbook has mentioned only one! There are also times when the fact culled from the textbook is simply wrong. The question *Our highest import is from (Hong Kong, Italy, Kuwait)* (0533) has no correct answer provided—at least for any year in the last quarter century.

Common causes of this general malady are:

(1) the examiner's desire to test familiarity with the nooks and cranies of the textbook rather than to test for competencies and core concepts and

(2) the paper-setter's genuine confusion on what is central and what is peripheral, and what the role of the exam should be—to evaluate competencies and understanding of core content and concepts, not familiarity with obscure (and often incorrect) factual trivia.

False objectification, i.e., the chopping up of unified, integrated knowledge into discrete chunks, is another frequent problem, especially in the social sciences. The following question is a good one: *How was the feeling of cooperation, friendship and punishment seen in Queen Victoria's Proclamation of 1858?* (GSY 61/2). But rather than asking for a meaningful essay the question asks for '*five* examples' of such feelings, which rather undermines the enterprise. A more extreme case of how a meaningful question loses all meaning when it is chopped up for the sake of ease in marking is the following question from a 2004 Business Studies paper (GSY 66/3): *Explain, in brief, any six steps involved in the process of selection of employees* (6 marks). Surely, the sequence is more interesting and important than the number of steps. Why should a student not be invited to write a coherent essay on the process of employee selection and its key issues? Should marking convenience (6 points: 6 marks) take precedence over coherence?

Marking convenience (and excessive reverence for the content of a textbook) often leads to another shortcoming. An obsession with objectivity leads to a lack of open-ended questions even when the content demands it. Students are forced to justify a textbook assertion that is easily (and fruitfully) contestable.

Explain how the Revolt of 1857 was the First War for National Independence (GSY 61/1). It leaves no room for a student to hold the view held by most mainstream historians today—that Indian nationalism was scarcely a cause of the events of 1857, and that there is little continuity between these events and the post-1890s anti-colonial struggle.

What is the relevance of Gandhism today? (GSY 59/1)—this question forces the student to argue that Gandhism *is* relevant.

Often a good question is marred by a disproportion between the few marks allotted and the vast breadth of the question. Examples of this from 2004 exams are as follows.

Is Marxism relevant today? 2 marks (hence just over 3 minutes!) (GSY 59/3 Pol. Sc.)

Give a general picture of the political trends of the world after the Second World War. (725S)

Describe the ideals and principles embodied in the Constitution of India. (4 marks—725S)

Write a short note *on the scope of Ethics.* (5 marks—730S)

Passages chosen to test English comprehension routinely cater to students from a particular class: *affluent, urban, and conversant with Western practices.* Note the extract provided below.

DSL English Communicative 1/2: "If your credit card is more of a functional accessory while you shop or entertain in your own town, you will want a higher credit limit. Here, foreign and private banks will give you a higher credit limit."

Would this make much sense to a student outside this class? Another passage, this time on whale hunting in the Arctic seas, describes how "the blubber is stripped off and boiled down… and can be made into food for human consumption." This may be appropriate to a question on human geography, but cannot passages that are more relevant be found to test English competencies? The passage continues: "Both cod liver oil and halibut liver oil are given to sick children… These oils may be bought at any medical shop." (0522) Not only does this continue to make sensitive stomachs churn (perhaps sicken)—it is also untrue. Only a big urban chemist in India will stock cod liver oil, and halibut liver oil is virtually unknown.

Even a very basic question like *The headquarters of the Theosophical Society in Madras is at (Adyar, Annanagar, T. Nagar)* [0562—History & Civics, 10th Grade] has a definite urban bias.

Finally, one turns to questions in the 2004 papers that are ambiguous—often to the point of incomprehensibility.

Write a critical note *on the emerging party system in India.* (GSY 59/2) [The party system in India is hardly emerging—it has been there since 1947. Is the question asking about new trends within it?]

When do you get good from a book? (0551—English Paper 1, 10th grade) [Such sloppy expression would be inexcusable even in a paper other than an English paper.]

Give the meaning of globalisation and the steps taken in this direction? (DSL 32/1) [By whom? When?]

Who acts as the reserve force in the Council of Ministers? (0531) [Neither is the term 'reserve force' used in the Constitution nor is it referred to by anyone we know of. Nor is it immediately clear what the phrase means.]

Indivisibility of the world is questioned by the very existence of 'Third World' countries—Examine. (725S) [Why such questions are not vetted and weeded out is the real question.]

ANALYSIS

The cause of the above question setting/ paper setting malady is not difficult to diagnose. In recent years, exam boards have shifted their attention to preventing paper leakage. Substantive vetting of papers is rare as it poses a security risk. As it stands today, the system is primarily designed to be 'accountable' in case there is a leak, not to ensure quality. The prevention of cheating has also necessitated the creation of *multiple* sets of question-papers, placing a further burden on the process. In some states, like Punjab, five students sitting behind each other will all each solve a different question paper. In other states, many sets are generated but only one finally used, and the other sets held in reserve. But in either case, the plight of paper-setters is unenviable. In several states question papers are set by one individual, or a very small group of individuals, behind locked doors. These one or more individuals create multiple sets (usually three to five) on a single day (usually about four months before the exam) and get paid about Rs 250 per paper for the pains they take. Other than the textbook there is usually no support material provided, nor permitted to be brought in (ostensibly for security reasons). Nor is there scope for later modification. Given the conditions under which they are produced, it is no surprise that the questions are trite and require mechanical regurgitation, or problems are directly taken from textbooks.

Paper-setting needs drastic reform. In fact, as has been successfully tried in Maharashtra (though for reasons of security rather than quality), the focus should shift to *question setting* from *paper setting*. Written by different paper setters at different times, questions should be categorized according to level of difficulty, topic area, competency being evaluated, and usage and testing record. A small expert group can then assemble individual questions into a paper. It should not be necessary that individual questions are written by experts. Indeed, democratisation of this process is desirable. Good questions should be canvassed from teachers, college professors in that discipline, educators from other states, ex-students, and even students. After a question has been selected and used in a paper, the question writer should be suitably compensated—this should provide incentives to write better and more innovative questions.

A type of question that has great untapped potential is the multiple-choice question (MCQ). Well-designed multiple-choice questions with plausible distracters have the following advantages over 'short answers':

1. They can be machine-marked and, hence, are entirely 'reliable'.
2. Very quick results are possible.
3. Copying problem can largely be eliminated by shuffling of question numbers.
4. Extensive syllabus coverage is possible due to the brief time needed per question.
5. Lower student anxiety levels, higher pass percentages, and lower urban–rural score disparities are reported by DSERT in Karnataka, where MCQs have been tried extensively in recent years for 60% of many subject exams.

It should be stressed that designing a good MCQ paper is an art and cannot be left to untrained examiners. They will require training by specialist trainers. Also, MCQ is not a panacea for the exam system. While MCQ can more deeply probe the level of conceptual understanding of students and gauge a student's mastery of subtleties, it cannot be the only kind of question in any exam. MCQs work best in conjunction with some open-ended essay questions in the second part of the paper, which tests expression, and the ability to formulate an argument using relevant facts.

If, as we recommend, exams in most subjects adopt a combination of MCQs and open-ended essay questions (which could be 'tiered' to help students structure their response), the ubiquitous 'short answer' or 'objective-type' question (the staple of exams today) can be eliminated altogether.

PART (D): ONE SIZE DOES NOT FIT ALL: THE NEED FOR FLEXIBILITY

Exam systems need to be more flexible. Just as we must ensure that education and assessment systems are fair to all social groups, we should ensure that they do not discriminate against particular kinds of learners. There is a lot of psychological data to suggest that different learners learn differently, and, hence, to test all learners through a written test of the same type in subject after subject is unfair to those whose verbal proficiency is superior to their writing skills, those who work more slowly but with deeper insight, or those who work better in groups than individually.

WE PROPOSE THE FOLLOWING SOLUTIONS.

1. *There should be more varied modes of assessment, including oral testing and group-work evaluation.* This is extensively discussed in the section on CCE and Teacher Empowerment. Suffice it to say, here, that as sensitive teachers usually pick these unique strengths and weaknesses of students, one should utilize their insight in assessment and empower them and the system of internal assessment. At the same time, to prevent its abuse by schools (as is currently the case in practical exams), internal assessment must be graded on a relative, not an absolute, scale and must be moderated against the marks obtained in the external exam. External moderation of internal assessment through mandatory random sampling is strangely absent at present. The consequences are predictable: abuse of the system by schools is rampant, the end-users have little faith in it, and boards, aware of this, usually report internally assessed marks separately, thus allowing them to be ignored.
2. *Do not expect everything of everybody in every subject.* One can appreciate the rationale for not having different curricula for different types of schools and types of students. (As has been argued—most forcefully in Maharashtra—this would perhaps create a hierarchy within the same exam board and create two classes of learners.) But, just as we allow students and schools some element of choice in the choosing of their subjects, they should have the choice of picking one of two levels within that subject. Of, say, six subjects, every student would choose to do 3 (or 4) exams at the higher level and 3 (or 2) exams at the standard level. Though set on the same curriculum, higher-level exams would have a larger component of high-order-skill testing and demand greater speed, conceptual understanding, and depth of insight than the standard-level exams.

   Not only would the above reform cater for different kinds of learners and allow different levels of testing, it would also reduce overall student stress levels. It is well known that students experience greatest stress before and during their most 'difficult' subject exam.

   Secondly, this reform, when applied to Mathematics and English, two subjects with the lowest pass rates in most boards, will also improve the overall pass rate. As envisioned by us, standard-level Mathematics for the tenth grade would be designed for students who will not pursue maths and the sciences further. It would focus on computation, algebra, areas, financial maths, and interpretive statistics— quantitative methods that will equip them for life. Trigonometry, set theory, logarithms, geometrical proofs, volumes, and more technical topics within mathematics will either feature only in higher-level mathematics (if there are two syllabuses), or comprise less than 20% of the standard level paper (if there must be a common syllabus).

   Likewise, English could be examined at three levels: the most basic level would seek the ability to comprehend and communicate in English and would have a substantial oral-tested component. The intermediate level would be a test of standardized English, seeking correctness of grammar, spelling, syntax, etc. in addition to comprehension and communication. The highest level would, in addition, test skills of literary analysis. A similar three-level format could, indeed, be adapted for all languages. Every student should be expected to test for one language at the highest level and another (or two, in some states) at *any* level.

3. *Flexibility in when exams are taken*: If it is accepted that learners learn at different paces, there is no reason, other than administrative convenience, to test them after two years of higher secondary course in all subjects simultaneously. We recommend that students be allowed to clear some (up to two, perhaps) subjects at the end of the XIth (or the IXth grade for the secondary exam). This would not only reduce stress a year later but also make for better long-term learning—and cause very little inconvenience to exam boards. Allowing students to take another two exams in the middle of the XIIth (or the Xth for secondary exam) would require boards to depart from their once-a-year schedules (barring re-takes) but would lead to a more learner-friendly system.

   In general, every student should be given a three-year window within which all the subjects must be passed (or scores improved). In any one exam session students should have a choice of taking no exam, all exams, or a few exams. This reform besides allowing for learning and testing to take place when a student is ready for it (rather than when the board decrees it on a one-size-fits-all principle), also works towards social justice. A large number of exam candidates are trying to hold down a full-time or part-time job while doing their exams. A large number of these students do not get through because they do not get more than a week off before the exams—hardly sufficient time for preparation for all subjects. Allowing them, for instance, to do two subjects in each of the three sessions would greatly enhance their performance.

   In the long run, the system must gradually move toward on-demand exams (they are usually done online, internationally) taken when the candidate is ready, rather than at the convenience of the system. We suggest a small beginning of this in computer science exams as a pilot project and its future extension to maths and physics exams.

4. *Enhanced reporting of performance* (or *Comparing apples with apples*): Along with the absolute mark (or grade) in each subject, it is now very easy, given computer-based registration, to provide information of *relative* performance on the mark sheet. We recommend that percentile rank be given with respect to (a) the entire universe of candidates in that subject, (b) all candidates in that school, and (c) all candidates in that block. A student from a disadvantaged area with low-quality educational infrastructure who scores, say, 70% (absolute marks) would attain a percentile rank on 95% within her block—a commendation that deserves mention. A South Mumbai student at an elite school who also attains 70% may, likewise, attain a percentile rank of only 50% within the school and 60% within the block.

   While there is no way to ensure that colleges, junior colleges, and professional courses at universities will pay attention to these parameters of *relative* merit (and it would be hard to argue that merit, in education, is not a relative concept), in their admission process it is important to make this percentile-rank data accessible to these end-users.

PART (E): REDUCTION OF EXAM STRESS AND ANXIETY

It should be remembered that examinations are artificial situations created for the convenience of the system and not the individual learner. They are relied on because more holistic assessment is usually unviable due to cost and manpower constraints. Given their artificiality and time-bound and 'one-shot' nature, it is not surprising that exams in their current form will induce anxiety. Even so, the recent increases in news reports of students getting seriously affected by pre-board or board examination anxiety and committing injury to themselves or others is disturbing. We see this stress as a symptom of the malaise afflicting exams rather than the disease itself.

As suggested above, adoption of more comprehensive and credible system of internal assessment would reduce some of the stress felt during external exams. The choice the student would have of taking two or three of his more anxiety-inducing subjects at the easier standard level, and at a time of *his* convenience, would also help.

In addition, we recommend the following measures for reducing exam anxiety and its often-morbid consequences:

1) A lot of stress is related to the *excessive length* of the question papers. Shorter exams that leave time for deliberation and periodic rest would help. The exam length (usually 3 hours per subject) should be reduced (to 2.5 hrs for higher level exams and 2 hours for standard level exams), remembering that the paper setter's quest to cover all sections of the syllabus is an illusory one in any case. As importantly, the numbers of answers expected and the quantity of response in the given time should be reduced. Exams should be set so that 95% of all students should be able to complete it *and* have time left for a quick review. Pilot projects should be initiated in which exams are not time-bound.
2) Questions that require students to draw on two or more areas of the syllabus would also allow more comprehensive testing within lesser time, in addition to constituting good educational practice by calling on candidates to make relevant connections between material from different chapters. (This is a much-needed skill but rarely tested in Indian board exams. If we accept Prof. Yash Pal's contention that education is all about making lateral linkages, all about creating 'an ecology of knowledge in the brain', such questions are surely necessary.)
3) A shift in emphasis from 'short answers' (often requiring familiarity with two obscure lines at the bottom of, say, page 124) to MCQs designed to test real understanding of core concepts would help reduce student anxiety, in addition to allowing greater differentiation at the top end. (Already discussed in earlier section.)
4) Unless the school lacks a very basic infrastructure, students should be able to take the exam in their home school in order to reduce stress caused by additional travel and unfamiliar environments. (Discussed in a later section.)
5) A shift in emphasis to testing competencies and away from memory would certainly reduce stress, in addition to aiding the validity of exams. A long-term move toward open-book exams can be envisaged and is one of the pilot programs mentioned at the end of this report. Meanwhile, candidates doing Chemistry paper should be given the periodic table and bond angle values; examinees in Math and Physics should be given some trigonometric identities and other formulae which otherwise have to be learnt by rote. The focus of questions should,

likewise, move to genuine applications from mere 'plug-in'-type problems. In history, questions which test whether students know where each of the Indian National Congresses met (pure rote) be replaced with questions on the *significance* of key Congress sessions. Questions such as *Mention eight causes of the events of 1857 (4 marks)* set panic bells ringing (with the student worried that she cannot remember more than five, and then bungling even these in her anxiety) and should be replaced with questions eliciting open-ended data response and analysis. For instance, in this case, three key paragraphs from the 1857 Azamgarh Proclamation could be provided and students asked an open-ended question: 'Based on this extract *and* your own knowledge, discuss whether the events of 1857 can best be described as the Great Revolt, the First War of Indian independence, or the Sepoy Mutiny.' This would not only be more humane and less stress-inducing, it would also call upon students to organize their thoughts into an argument and demonstrate higher-order interpretive skills.

6) *Elimination of 'the term fail'*: We recommend that the word 'fail' not appear on mark sheets, and be replaced by phrases such as 'unsatisfactory', or, better, 'needs more work to attain desired standards'. The word 'fail' carries a social stigma and often victimizes a student for systemic deficiencies in teaching, textbook availability, etc.
7) *Elimination of the pass/fail concept by permitting repeated retakes:* There is no evading the fact that the purpose of board exams is to certify the satisfactory completion of a course of study. There will always be some individuals who cannot demonstrate such satisfactory completion. They should be provided a number of chances to re-take one or more exams (within a three- or even a five-year period). Till then, they are 'working toward the certificate'. Even after the expiry of this window, they should be free to attempt the whole exam (in all subjects) again. Hence, while it is possible to not succeed in passing an exam, no one ever definitively (and permanently) 'fails'. We believe that the above distinction is meaningful, and considerably different from the current understanding of boards on the pass/fail issue.
8) The Focus Group is not convinced that boards today work (singly or collectively) toward ensuring that the pass mark represents a meaningful and carefully calibrated cut-off designed to certify satisfactory completion of a course. In some subjects in some boards, attaining the cut-off mark (30%, 33%, or whatever) is relatively trivial and does not guarantee attainment of even a minimum competency. In other subjects in other boards (or even the same board), the minimal competency desired is attained even by students attaining 25% marks. Papers in all subjects and all boards should be designed so that the pass mark is not just an arbitrary cut-off but actually measures the attainment of desired competencies.
9) Following the principle that exams are an evil, if a necessary one, there should be no exams than are strictly and absolutely necessary. *The tenth grade board exam should be made optional forthwith.* Tenth-graders who intend continuing in the eleventh grade at the same school, and do not need the board certificate for any immediate purpose, should be free to (and encouraged to) take a school-conducted exam instead of the board exam.

Recent proposals of various boards to introduce board exams at various other levels of primary and secondary education, however well-intentioned, will further exacerbate the vicious cycle of over-testing and undue anxiety, and further undermine the joy of learning and discovering. We recommend that such plans be dropped forthwith. If some schools are unable to conduct fair and meaningful year-end examinations, it is because there has been little investment by boards in teacher training with a viewpoint to improving school-based assessment, and because the tight textbook–exam nexus has increasingly rendered the teacher a mere addendum to the learning process. One must work toward re-empowering the teacher and dis-empowering boards—not toward further extending the domain of boards into the education process.

PART (F): EXAM MANAGEMENT

In the non-academic side of exam management, there has been a significant improvement in recent years. Aided by computer technology, the whole process from registration to generation of exam tickets and generation of mark sheets has become seamless and largely error-free in many states. Most states also now release results within 45 days from the last exam, a significant improvement over the pre-computerization norm of 60–70 days. Technology has also aided the prevention of malpractices such as impersonation (scanned photographs on both ticket and mark sheet), copying (electronic eyes), and influencing examiners (encrypted barcodes).

What we list below are some 'best practices' that we recommend for adoption by all states. By its very nature, this can only be a selective list. We urge COBSE to draw up a more detailed document outlining more such 'best practices'. It would be invaluable to smaller boards and even boards with good track records could gain a lot by studying the practices of other state boards in selected areas.

A: PRE-EXAM

1. *Choice of exam centres*: The travel convenience of students should be paramount here. During exams, students should not be expected to travel much more than their daily trip to their school. When a school is large enough and has the requisite infrastructure to be a centre, students should be able to appear for their exams there itself in a familiar environment. This will have the benefit of reducing stress on candidates. To prevent school-aided malpractices, the invigilation team should however be largely or entirely from another school in the locality.

   In some states, like Kerala, students have a right to take their exam in their own school—hence each school is also a centre. While this should be the ultimate goal, we recognize that malpractice situations in different states are different, and several schools in many states lack the requisite infrastructure. We suggest that all schools, public and private, which possess the following facilities be authorized as centres for their own students:

   - Compound wall
   - Telephone
   - Power
   - Police station in the area (may be relaxed for rural schools)
   - Photocopying facility within one km (may be relaxed for rural schools)

   Schools would lose the privilege of being centres if found engaging in malpractice or found incompetent in preventing it.

2. *Exams should never be postponed*, as it causes considerable hardship and unnecessary anxiety to candidates and undermines their faith in the system. In

cases of flash teacher strikes, police and Zilla Parishad staff should be mobilized and trained as stand-in invigilators. More commonly, board exams have had to be postponed because of an unforeseen holiday observed by a community within the state. All boards should announce the schedule of exams at the beginning of the academic year through public advertisement, and all communities invited to voice their reservations to the draft schedule, if any, by the end of October. The dates would then be frozen. To prevent postponements due to paper leakage, one emergency 'replacement' set of papers should be always be at hand.

3. By *protecting the identity* of candidates and examiners from each other, a lot of post-exam malpractice can be checked. Maharashtra has successfully implemented a system of encrypted barcodes which hides the identity of the student (and the school she hails from) from not only examiners but also exam board employees. When this is used in conjunction with another method that many states already adopt, randomising of exam scripts given to any particular examiner, malpractice at the level of the examiner becomes far more difficult.
4. *Paper setting*: This is a crucial area which requires far more attention than it does at present, and is dealt with in a separate section of this report. It only needs to be stressed here that the question/paper setters must produce the initial mark scheme for that paper in addition to the paper. Strange as this may sound, the two processes remain divorced at some boards. Subsequently, of course, the mark scheme should be edited by experts, very soon after exams and then again re-edited in light of typical student responses—which may reveal ambiguities or errors in the question paper.

B: CONDUCT OF EXAMINATIONS

1. While flying squads are a good idea and, along with public awareness, have led to a decline in cheating and copying in many states—most visibly in Haryana in the last two years—they should minimize their intrusiveness in the exam process. Candidates should not be disturbed in the course of their exam and if disturbance must be caused (e.g., for mass checking of entry tickets to detect impersonation), compensatory time should be given to candidates.
2. In general, electronic surveillance by hidden electronic eyes and the use of technology such as magnetic strips on doors is less intrusive and preferable to flying squads eager to make their presence felt. Costs of renting these technological aids have fallen sharply in recent years.
3. A major source of cheating remains help from outside, sometimes even through ingenious means such as mirrors and drums. If candidates are not permitted to leave the exam centre in the first hour, and even thereafter not permitted to carry out question papers with them, most of this can be nipped in the bud as errant helpers on the outside simply would not know what answers to provide.
4. Seals on the question paper packet should be opened and signed, just prior to the exam-start, by three individuals: chief invigilator, police/security chief of the centre, and a student candidate. Likewise, answer paper packets should be sealed and similarly countersigned before their departure from the exam hall.
5. Toilets are often used by candidates as repositories of crib sheets and must be monitored throughout the exam as closely as the exam hall itself.
6. Responses to the paper just concluded should be invited from teachers for a period of 24 hours. Pre-designed forms (both physical and online) should be

distributed for this purpose and teachers should return them within 48 hours of the end of an exam. They are often the best judges of the length of the paper, adequate syllabus coverage, errors, and ambiguities in questions. These views should be taken into account while creating the mark scheme.

7. One area of immediate concern is the widely varying concessions and facilities available to students with physical or learning disabilities. Some boards have not taken up this issue in earnest and need to be acquainted with more progressive measures taken by other boards. A separate Focus Group report deals with this aspect.

Part (g): Transparency and Honesty in Mark/Grade Reporting

1. As a lot is at stake in exams, it is only natural that many candidates would want to be doubly sure that they have not been victims of systemic error. Exam boards should not only *be* transparent but also *be seen to be* transparent with respect to answer paper, re-grading, re-checking, etc. Such requests also represent an opportunity for internal audit of systems and examiner quality. Even so, sadly, some boards view such requests as a hindrance to their functioning. At the recent Trivandrum COBSE conference, the ex-chair of an important board even opposed a recent Supreme Court decision that gave candidates the right to having question papers re-checked. "How do we know that the second examiner is not in error?" he asked. The inability of boards to find reliable senior examiners for such re-checks should not be an excuse to deny students a right to transparency.
2. Requests for re-checking have declined dramatically in states like Kerala, Gujarat, J&K, and Karnataka, which have given students access to their answer papers (at a charge, of course) in either scanned or photocopied form. We laud the efforts of these and other states to make their systems transparent. One can also be fairly sure that the more casual examiners in these states now do their job more diligently. Greater transparency generally leads to greater accountability and efficiency. We strongly recommend that all other states fix their systems to provide such access to students, on request, at reasonable (but not subsidized) cost.
3. Detailed mark schemes should also be made public, and posted on official websites for scrutiny, as soon as reasonably possible in the interest of transparency. Where several question papers have been used simultaneously (to prevent malpractice), they need to be standardised for the level of difficulty, and scaling done if one is appreciably more difficult than another. This does not happen at several boards. One response from the board chair of a northern state is worth quoting: "The same paper setter produced all five sets on the same day, so we assumed they were of comparable difficulty."
4. Enough time (at least two weeks) should be provided between the delivery of scanned/photocopied answer papers and the end of the period for appealing a grade. All re-marking should be done by experienced examiners. We suggest the following: if the first re-mark results in a total mark change of less than 5%, the initial mark awarded stands; if the change is between 5 and 10%, the new mark stands; and if the discrepancy is greater than 10%, it is sent up to a high-level examiner (preferably one involved in the preparation of the mark scheme) for final arbitration.

If the final mark changes by more than 5%, there has clearly been a slip-up on the part of the board and, as a gesture of goodwill, the re-checking charges should be refunded to the candidate. (The argument that they should be happy that their marks have gone up, and should not care about the minor cost, is not germane to the issue.)

5. To prevent frivolous grade-appeals, boards should reserve the right to raise *as well as lower* marks/grades if the deviation upon re-marking is found to be greater than 5%.
6. All of the above are not alternatives to the creation and maintenance of sound systems of examiner moderation, but just additional safeguards. At least 10%, and preferably 20%, of each examiner's output should be sent up for moderation, and, likewise 10%–20% of each moderator's output sent up to a senior moderator. Examiners whose marks are found to correlate poorly with that of the moderator's ($r<0.8$), or where the absolute deviation exceeds 10%, should be fined, as is the practice in Karnataka, and barred from future examining. The entire output of 'failed' examiners, more importantly, should be re-marked. Statistical methods to test and adjust for inter-examiner variation exist and should be employed.
7. The above point (6) presupposes that examiners are volunteers eager to do a good job. This can only happen if they are paid a fair wage for their important work. The practice of forcing teachers to examine is highly unlikely to lead to good examining and should be abandoned forthwith. Furthermore, it should be recognized that all good teachers do not make consistent examiners and vice versa. If boards pay examiners better—and we recommend a rise in daily wage from the low Rs 100 or 125 per day by a factor of two or three here, not 10% or 20%—and weed out poorly motivated examiners, many of the core problems will get solved. (Given that most state boards in India are in good financial health—one small state even boasts of an accumulated corpus of Rs 84 crore—funds should not be a problem.) This higher payment should, however, be linked to the level of correlation between the examiner's mark and the senior moderator's. Promotion to rank of moderator or senior moderator should also not be merely a function of seniority but merit—as measured by his/her level of correlation. Special awards for especially conscientious examiners should also be instituted, just as for excellent teachers.
8. If, as we recommend, state boards introduce more open-ended and free-response questions and eschew false objectification, there would have to be specialist examiners trained to evaluate such questions. In such cases, question-by-question marking is preferable to one examiner marking the entire answer paper. Some states already do this.
9. It is recommended that examiners generally grade papers at regional centres set up for the purpose and not at home. A limit of twenty-five scripts a day per examiner should be imposed to prevent error due to fatigue.
10. *Honesty in mark sheets*: While the recent debate around the 'marks or grades' issue has been regrettable, as it has focused everyone's (and the media's) attention on just one aspect of exam reform, grades do have one clear advantage over marks. They are more honest. Given the quality of the average examiner (often coerced into marking and always poorly paid), the ambiguity of the questions, and the lack of moderation systems in most boards, the standard error of the mark awarded is high. It is therefore much more honest to declare a grade (say 70–80% =B) than to award a mark (say, 74). Grades also have some other minor

advantages over marks. For instance, automatic re-grading of exam scipts can be confined to those students currently at the top end of the lower grade, that is, students for whom an error is most likely to have a negative impact. They may also play some role in reducing stress and in eliminating the 'top rankers' game so dear to the media and coaching classes. At the same time, we should recognize that grades are not the panacea that some of its champions have made them out to be, and a transition from marks to grades is a minor (if worthwhile) exam reform at best.

We laud the work of NCERT, CBSE, and the Kerala and Karnataka boards in popularising the virtues and reliability of grades among the general public, even at the risk of negative media publicity. Even more will be needed to convince end-users, especially universities, of the value and necessity of grades. The issue of whether grades are to be based on absolute or relative scales and, if the latter, whether one uses percentiles, stanines, or whatever needs to be resolved by consensus among boards. Standardisation of a nine-point grading scale, for both 10th and 12th grade exams is also needed in order to offer inter-board comparability of results. Till such time as this consensus is reached, we recommend that marks be reported alongside grades to avoid sowing confusion.

11. *Transparency and fairness in mark sheets*: A reform which we believe to be of at least equal importance (as the issue of replacing marks by grades) is a fuller disclosure of how the student fares relative to his or her peers. Now, with computerization of registration and grade reporting, it is possible to present a wider range of performance parameters on the mark sheet—absolute marks/ grades, percentile rank among all candidates of that subject, and percentile rank among peers (e.g., rural schools in the same block). Particularly the last parameter, we believe, is a crucial test of merit. For too long in India, we have reduced merit to a single mark per subject and a single overall percentage. Merit is a rather more complicated concept. Can we honestly assert that two students who both attain 75% in their board exams but with one having attended a school in South Mumbai and another a school in rural Mulshi are equally meritorious? Has the latter not had to overcome greater systemic odds? School boards cannot force university admission committees, or the job market, to consider these factors. But printing this data on the mark sheet constitutes a start toward a fairer definition of merit.

PART (H): SCHOOL-BASED ASSESSMENT

While the primary mandate of this Focus Group was to suggest reforms for exams (as opposed to all assessment), we would like to make a brief plea for the importance of school-based assessment, and hope we can strengthen it in the medium term.

1) *Continuous and comprehensive examination (CCE)*: The group felt strongly that a school-based continuous and comprehensive evaluation system be established in order to (i) reduce stress on children, (ii) make evaluation comprehensive and regular, (iii) provide space for the teacher for creative teaching, (iv) provide a tool for diagnosis and for producing learners with greater skills. The CCE scheme should be simple, flexible, and implementable in any type of school from the elite one to a school located in rural or tribal areas. Keeping in view the broad principles of the scheme, each school should evolve a simple suitable scheme involving its teachers, and *owned* by the teachers.

2) *Issue of CCE* certificate*:* To make CCE effective, some weight to school-based assessment (SBA) should be given in the school-leaving certificate issued by State Education Boards. The certificate of the student's performance in the school, in all areas, should be issued along with the board certificate by the board. The performance should be shown in terms of grades in each area appropriate to the stage of schooling. The two types of assessments, i.e., internal and external, should, ideally, be shown separately in the certificate issued by the board. To begin with, 20% weightage may be given to CCE for class X.

3) *Keeping internal assessment honest*: The question of how to keep schools honest in internal grading is a burning one. Without guarantees of such honesty, end-users of board mark sheets have little interest in it. In general, we recommend a method of internal grading with external moderation (through random but mandatory sampling) by the board. In other words, designated samples of internally assessed work must be sent to the board in each subject. In cases where the board is satisfied with the quality, they should get its mark of approval. Otherwise, the remark accompanying the CCE mark on the mark sheet will read: 'Declared by school with no board authentication.' In cases where quality standards are met but the marks awarded are too high reference should be made to the school average for CCE—which would automatically deflate the attainment in the eyes of the end-user in cases of over-generous marking.

4) *Practical* Examinations*:* The shabby assessment of science practicals by schools, in most boards, with a majority of candidates getting full or near-full marks (often without even the experiment having taken place) is a good illustration of what happens when boards abdicate their responsibility to monitor and moderate samples of school-based evaluation. The checks suggested in the preceding paragraph need to be implemented without delay. If they cannot, the farce of school-assessed practicals must end and the science marks be given entirely on the basis of theory exams (which would have to then include a section on planning experiments). It would be unfortunate if it has to come to this as good experimentation and experimental skills are at the heart of the scientific enterprise. Unless laboratory assessment is made less farcical, the *quality* of the country's scientific manpower is under serious threat; the *number* of students interested in scientific pursuits is already stagnating in several states.

CONCLUSION

It should be clear from the above that board examinations in India need serious re-examining. This reality is deeply at odds with the spirit of self-congratulation and 'all is well' at the level of many exam board chairs and education department secretaries. Things will not improve if we continue to drape ourselves in "the fatal shroud of complacent self-esteem".[10] At the same time, the Group felt energized by the enthusiasm for reform shown in its many encounters with schoolteachers across the country. Such support from teachers is crucial. The success or failure of these reforms will rest on the importance accorded to teacher and examiner training. Much time, effort, and money will need to be invested in such training. Much of this can be accomplished through EDUSAT and distance learning for teacher training. The curriculum of pre-service teachers will also need to be revised. For in-service teacher training, a certificate/diploma course in Educational Measurement and Evaluation should be started by NCERT. *Reforming exams alone will attain very little unless it is accompanied by other basic reforms: improvement of teacher training, teacher quality and teacher-student ratio. In addition, making textbooks and the curriculum more relevant and interesting and challenging; and spending more on education (at all levels but now especially for the secondary level) will be vital.*

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[10] In the words of Edmund Burke.

At the same time, it should be recognized that exam reform has the potential to lead educational reform. It has often been lamented that in Indian education the tail (assessment) has usually wagged the dog (of learning and teaching). The charge is a fair one and de-emphasising exams will certainly liberate the learning and teaching process from its straitjacket. But this pivotal position of exams in the educational system can be used to leverage advantage—to hasten reform within Indian education as a whole. As we have seen in many other areas of government in the last decade, once the winds of change begin to blow they sweep most cobwebs away. The tough job is to get them blowing.

APPENDIX 1

Recommended pilot programs to test some radical long-term reforms

Pilot I	Already initiated in Karnataka, to move toward 60% or more of all exams toward the MCQ mode.
Pilot II	Already existing in Turkey. A minimalist end-of-school exam. One three-hour 150 MCQ exam covering all subjects studied. Its sole purpose is to validate the school-given exam grades and to raise/lower them by a moderation factor.
Pilot III	Open-book exams, and source-analysis based assessment. Also, exams without time limit.
Pilot IV	The exam system must gradually move toward on-demand exams (they are usually done online, internationally) taken when the candidate is ready, rather than at the convenience of the system. We suggest a small beginning of this in computer science exams as a pilot project and its future expansion to maths and physics exams.

APPENDIX 2

Continuous and Comprehensive Evaluation (CCE)

The need for introducing CCE in schools in an effective and systematic manner has been felt for a long time. As the examinations conducted by the boards of school education have some shortcomings, greater importance is now given to CCE at the school level. Quite a few boards have developed schemes of CCE for implementation in schools. In some cases, the public school principals on their own have taken steps to introduce a periodic system of testing. In some states, the Government has taken initiatives for the periodic assessment in scholastic areas only and co-scholastic areas have been left out. CCE needs to be institutionalised for all stages of school education. In the present set-up, more importance is attached to the assessment by boards and school-based assessment is driven to the back seat. The scenario is now changing. Many school education boards are now emphasising the importance of CCE and have taken measures to implement it in schools with the cooperation of the State Education Departments. CCE should be viewed not as an alternative but complementary to board evaluation.

Features of CCE

a) Continuous and comprehensive evaluation (CCE) refers to a system of school-based evaluation of students that covers all aspects of students development.

b) The 'continuous' aspect of CCE takes care for 'continual' and 'periodicity' of evaluation.

c) Continual means assessment of students in the beginning of instructions (placement evaluation) and assessment during the instructional process (formative evaluation) done informally using multiple techniques of evaluation.

d) Periodicity means assessment of performance done frequently at the end of unit/term (summative) using criterion-referenced tests and employing multiple techniques of evaluation.

e) The 'comprehensive' component of CCE takes care of assessment of all round development of the child's personality. It includes assessment in scholastic as well as co-scholastic aspects of the pupils' growth.

f) Scholastic aspects include curricular areas or subject specific areas, whereas co scholastic aspects include co-curricular and personal social qualities, interests, attitudes, and values.

g) Assessment in scholastic areas is done informally and formally using multiple techniques of evaluation continually and periodically. The diagnostic evaluation takes place at the end of unit/term test. The causes of poor performance in some units are diagnosed using diagnostic tests. These are purposefully re-mediated by giving interventions followed by retesting.

h) Assessment in co-scholastic areas is done using multiple techniques on the basis of identified criteria, while assessment in social personal qualities is done using behaviour indicators for various interests, values, attitudes, etc.

(a) Scholastic Areas

Level	**Classes**	**Techniques**	**Tools**	**Periodicity and Recording**	**Reporting**
Primary	I & II	• Observation • Oral • Written	• Observation Schedule • Oral Questions • Question Paper • Diagnostic test	• Day-to-Day Observation and recording by the teachers • At the end of competency/Unit • Recording after the test	• Direct/Absolute Grading **(Three point)**
	III, IV & V	• Oral • Written	• Oral Questions • Question Paper • Assignment • Project • Diagnostic test • Activity/experiment	• Unit-wise • Monthly • Terminal • Recording after the test	• Absolute grading **(three point)**

Upper Primary	VI to VIII	• Oral • Written • Practical	• Oral Questions • Question Paper • Assignment • Project • Diagnostic test • Activity/experiment	• Unit-wise • Monthly • Terminal • Recording after the test	•Absolute grading **(five point)**
Secondary	IX to X	• Written • Practical • Viva-voce	• Question Paper • Assignment • Project • Practical (Activity/ Experiment • Oral Questions	• Unit-wise • Monthly • Terminal • Recording after the test	• Absolute grading **(nine point)**
Secondary	XI to XII	• Written • Practical • Viva-voce	• Question Paper • Assignment • Project • Practical (Activity/ Experiment • Oral Questions	• Unit-wise • Monthly • Terminal • Recording after the test	• Absolute grading **(nine point)**

(b) Co-Scholastic Areas

S. No.	Co-Curricular Activities	Personal Social Qualities including Attitudes and Values
I	**LITERARY**	Cleanliness
	1. Reading/recitation	Cooperation
	2. Debate/speech Making	Punctuality/regularity
	3. Creative writing	Discipline/obedience
II	**Scientific**	Emotional stability
	1. Club activities	Initiative
	2. Nature study	Responsibility
	3. Computer literacy	Diligence
III	**Artistic**	Environmental awareness
	1. Drawing	Tolerance
	2. Painting	Appreciation of good qualities
	3. Embroidery	Leadership
	4. Craft	Truthfulness
	5. Sculpture	Patriotism

IV	**Cultural**	Social service
	1. Music (instrumental/vocal)	Civic sense
	2. Performing arts (dramatics/dance)	Diginity of manual labour
V	**Physical**	
	(games/sports and yoga)	Respect for elders/others
	1. Indoor	Protection of environment
	2. Outdoor	Protection of cultural heritage
	3. Yogic exercises	
VI	**Miscellaneous**	
	1. First aid	
	2. Red Cross	
	3. Scouting	
	4. NCC	
	5. NSS	
	6. Adventure activities	
	7. Other hobbies	

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EDUCATIONAL TECHNOLOGY

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Appendix 184

EXECUTIVE SUMMARY

Educational Technology is the efficient organization of any learning system adapting or adopting methods, processes and products to serve identified educational goals. This involves systematic identification of the goals of education, recognition of the diversity of learners' needs, the contexts in which learning will take place and the range of provisions needed for each of these.

The challenge is to design appropriate systems, which will provide for and enable appropriate teaching-learning systems that could realize the identified goals.

Appreciation of the role of ET as an agent of change in the classroom, which includes not only the teacher and the teaching-learning process but also systemic issues like reach, equity and quality, would be the key to meeting this challenge.

Over the past decades, educational technology in India has taken two routes:

A large number of experiments aimed at qualitative improvement of the school have adopted the systems approach to analyze the peculiarities plaguing the particular situation and have evolved a range of solutions. They have included development of flexible systems, alternative curricula, multi-level organization of classes, low cost teaching learning materials, innovative activities, continuous support systems for teacher training, etc. While many of these experiments have demonstrated intrinsic merit, they have been restricted to pockets of intense practise and have failed to influence the larger school system.

Government sponsored schemes like the Educational Technology Scheme, Computer Literacy and Studies in Schools and their modern day analogues including the partnerships with global players, was the second route. This included the supply of Radio cum Cassette Players, colour television sets, microcomputers, present day computer labs and even the satellite receiving terminals. These schemes have largely remained supply driven, equipment centred and disseminative in design. Scant regard has been paid, despite clear indications to the contrary, to the development of the entire support system, which would establish ET as a reliable, relevant and a timely intervention.

Information and Communication Technologies have brought in a convergence of media along with the possibility of multi-centric participation.in the content generation and disseminative process. This has implications not only for the quality of the interchange but also in drastic upheavals of centre-dominated mindsets, which have inhibited qualitative improvement.

Modern ET has its potentials in school, in teaching of subjects, in examinations, in research, in systemic reforms and above all in teacher education, overcoming the conventional problems of scale and reach through online, anytime, anywhere reach.

There exists today in our country, a well-established publishing industry, desktop publishing, know-how and capabilities in producing kits, teaching aids, etc. There also exist production capabilities for audio and video, multimedia, broadcast channels, Internet connectivity, trained manpower and institutions with these mandates which can be leveraged to address the challenges of education.

Alternative models of education, distance and open learning models, on-demand education and other such flexible models of learning, will have to be tried and established.

Flexible systems, futuristic curricula and a 21st century career orientation have become a necessity for today's young people. There is an urgent need to convince the education system of their role in engineering the teaching-learning situation and to make it a more meaningful experience for both teachers and their pupils.

The focus group therefore suggests:

In revitalizing and reorienting existing resources

Capitalize on the existence of a number of large institutions and facilities, nation-wide networks, trained, professional and creative manpower in the area of ET. Re-engineer them to convert them into a potent system

Encourage fresh roles for these institutions including action research, data collection, in-service training of teachers, networking with nationwide efforts in education, evaluation research, developing models for interactive classes, interactive multimedia, tele-conferencing, video conferencing and in leading the process whereby materials can be generated by teachers, parents and children at every level.

Recognize the potential of ICT and the internet, promote universal access, facilitate participatory forums and develop communities and interest groups.

Invest on continuous, on demand teacher training and support, research and content

repositories, value added distance education and online campuses, aimed at increasing access, equity and quality of education.

In systemic reforms

Ensure that technology is used in an equitable and democratic manner to enhance the self-worth and self-image of the poor and the disadvantaged.

Counter the tendency to centralize; promote plurality and diversity.

Ensure opportunities for autonomous content generation by diverse communities.

Shift focus from fixed to flexible curricula with competencies and skills identified rather than specific factual content.

Deploy ET to enhance open education, which implies openness in curriculum transactions..

Work towards transforming all schools into ICT-rich environments.

Create opportunities for administrators and educational leaders in the school system to become ET-savvy and to be able to use ICTs competently.

In refreshing skills of in-service teachers

Create a system of lifelong professional development and support, especially to educational leaders and managers such as headmasters and principals.

Encourage ICT literacy for official and personal use to build comfort and later, creativity in educational work.

Support the development of and nurture teachers' self help groups / professional development groups on the ground and online.

Encourage and facilitate the use of media and technology-enabled methods of teaching-learning, also making it inherent and embedded in the teaching-learning process of teachers.

In pre-service teacher education

Introduce teachers to flexible models of reaching curriculum goals.

Introduce use of media and technology-enabled methods of learning, making it inherent and embedded in the teaching-learning process of teachers.

Train teachers to evaluate and integrate available materials into the learning process.

Enable trainee teachers to access sources of knowledge and to create knowledge.

In school education

Move from a pre-determined set of outcomes and skill sets to one that enables students to

develop explanatory reasoning and other higher order skills.

Enable students to access sources of knowledge, interpret it and to create knowledge rather than be passive users. Help them develop a healthy skeptical attitude towards media content.

Promote flexible models of curriculum transaction.

Promote individual learning styles.

Encourage use of flexible curriculum content at least in primary education and flexible models of evaluation.

In research

Create a framework to identify the generic skills (problem identification and troubleshooting for instance) needed for the new initiatives to be undertaken in ET.

Acquire knowledge on how learning takes place in ICT-rich learning environments, optimizing learning paths for learners with different learning styles coming from a variety of social backgrounds, including gender differences.

Examine possibilities of mobile technologies for learning purposes.

Indian perspective of Educational Technology (referred to as ET hereafter) essentially requires looking at the scenario related to evolution of ET in India, the periodic changes carried out in policies and curricular concerns. This backward look and current scenario that involves efforts from both the Government and Non-Government organizations should provide several pointers about how ET could be used fruitfully now and in future to attain desired educational goals, enhance meaningful learning in a rapidly changing world of the 21st century. These issues and concerns are discussed in the succeeding pages. While looking at the policy changes and research findings, the focus group found that the term ET is construed differently in different programs and by different agencies. We have therefore decided to begin by clarifying both the term and what all it implies.

1. WHAT IS EDUCATIONAL TECHNOLOGY?

The reason why the term ET is misconstrued is on account of the changing nature of ET's second component viz. technology. The basic tenets of ET namely using all available resources (human and non-human) in a systematic manner to find viable solutions to educational problems do not change; but as technologies change and newer ones are brought into service in education (or for that matter in other spheres of development) configurations, structures and applications of ET change. This dynamic and ever evolving nature of the discipline needs to be understood. Further, as educational problems are diverse, their solutions are also diverse: ranging from providing resources in the classroom to distance education or using technologies to facilitate communication. These multiple facets of ET make a crucial difference to the way the term is interpreted. As the discipline continues to evolve, we would like to give a short account of its evolution.

When the term was first coined, it referred to "technology in education", implying the use of a variety of audio-visual aids (as they were then known) for teaching purposes. Implicitly relying on the then widely accepted sender-receiver construct, educational writers saw these aids primarily as transmitters of lesson content.

As the concept of ET developed the term "technology of education" came into vogue. This looked at education in a wider sense and included various aspects such as entry behavior of the learner, objectives, content analysis, evaluation etc. By the mid-1970s ET borrowed the terms "systems approach" from management and "corrective feedback" from cybernetics. This widened the scope of ET as the process of teaching learning was examined in a holistic manner. The contributions of psychologists in the field of learning and instruction helped establish a keen interest in teaching-learning methods and processes. Skinner's Programmed learning, Bloom's mastery learning, and Keller's personalised system of instruction and ideas of instructional design attracted the attention of a large number of researchers and media developers and forms the basis of modern day interactive learning.

The arrival of digital convergent media encouraged interactivity and interconnectivity. This added a new dimension to ET. It gave impetus to its further development as a discipline. While this field continues to evolve, how to help the learners to help themselves in learning in an effective and interactive manner continues to be our problem.

As the focus group deliberated, we felt that when we talk of the role of ET, we should direct our thoughts to education and not to any technology and the logistics of getting it set up. The emphasis has to be on a culture of learning rather than on technology per se. Our perspective is that except in the case of teacher education where ET is taught as a subject, ET is a value addition to quality, relevance, appropriateness and other such attributes, transforming education to make it dynamic and responsive to the passions that move the learners and arouse their curiosity and desire to learn. The urge on the part of some to leave the term ET behind is rooted in the awareness that historically, the implementation of ET in India (and many other countries too) has been centered on machines and the educational software related to them. Such interpretations are easy to understand. More difficult to comprehend are approaches based on processes. Here we speak of the processes adopted by educationists to solve the difficulties that the prevalent system of education has in enhancing learning for desired educational goals.

The universally accepted definition of ET involves processes, methods and techniques, products, resources and technologies organized in workable systems. Recognition of the need for a multilevel organization of a classroom, for instance, along with designing of an appropriate program and its implementation become as much an ET exercise as use of audiovisual aids or using the information highway.

There is also a prevalent belief that modern technologies are better than older ones. Certainly they offer many exciting possibilities but both old and new serve different purposes of teaching learning and are probably equally relevant in different given contexts.

The key phrases in ET are appropriate technology, appropriate to the task in hand for meeting specific educational objectives and available resources all organized in a workable system that is checked again and again for ensuring that it is appropriate and changing it where it is not working. Formative evaluation and summative evaluation are essential parts of ET. In applying the discipline of ET it is imperative that the media choice must relate to instructional design and also to what is available and eminently usable.

The same is true of methods and techniques. For instance, memorization of facts still has a role to play. The ready availability of multiplication facts (pahadas) does speed up computation. It is the over-generalization and unthinking application in inappropriate situations that has brought disrepute to memorization. Charts, graphs, textual materials, experimental kits, projected electronic aids, audio materials, computers, films, videos and internet etc. can usefully serve the purposes of education in their own special ways and together can make learning an enriching experience.

ET could be defined in simple terms as the efficient organization of any learning system adapting or adopting methods, processes and products to serve identified educational goals. This would involve:

Systematic identification of the goals of education, taking into account nationwide needs (higher scalability for instance), the system capabilities and the learner's needs and potential.

Recognition of the diversity of learners' needs, the contexts in which learning will take place and the range of provisions needed for them.

Recognition of not only the immediate needs of children but also their future needs in relation to the society we are preparing them for.

Designing, providing for and enabling appropriate teaching-learning systems that could realize the identified goals

Development of a range of support systems, training, creating the enabling systemic conditions/materials, reaching these to the school system, and training teachers and students to use them.

Research into existing and new techniques, strategies and technologies for solving problems of education, enabling judicious and appropriate application of technology.

Appreciation of the role of ET as an agent of change in the classroom— the teacher, the teaching- learning process and its role even in systemic issues like reach, equity and quality. (This appreciation should not be limited to educators alone but to planners and administrators as well, since efficient systems both at micro and macro levels would be necessary to meet the current challenges of education).

2. HISTORICAL PERSPECTIVE

The basic tenets of ET have always been present in any effective system of teaching–learning for a long time though it was not called ET. For example, the old gurukul system had ET features of individualized instruction and accent on learning. The training program was devised to suit the needs and abilities of a pupil. It was a one to one (guru-shishya) system; but it did not mean rote learning or following the guru blindly. A Sanskrit maxim (Shishyat icchet parajayam) states that the fervent wish of a guru should be that his disciple would better him. Moreover, the teaching program was devised not only to suit the needs and potential of the pupil but also to suit the societal needs as expressed in identified learning goals.

One such goal for example, in the days when writing was unknown, was to maintain the oral tradition of the Vedas. It was perceived as important that the accent and pronunciation of words be preserved intact. The method adopted was to memorize the same text and the technique was using different pathas or sequences, which could be recited against each other to check any deviations.

The factory system of education with centrally controlled curricula/ text books/ school hours/holidays etc. came with the British rule. Then, as Gandhiji rued, every alternative school system was abolished.[1] That colonial shadow and control apparatus continue to plague the education system even today after India became politically free almost six decades ago. As a result we are now in the sorry situation so well described in the Yash Pal committee report *Learning without burden*.

EFFORTS TO MOBILIZE ET, LARGE AND SMALL

A number of groups doing innovative work in educational technology in India and abroad made presentations of their work and experiences before the focus group. The list of presenters along with their topics of presentation is given in Appendix 1. In addition, teams of focus group members visited several innovative programs and made presentations to the group. The boxes in this paper give information about some of these programs. Their respective websites would provide further details about these efforts.

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[1] "I say without fear of my figures being challenged successfully that today India is more illiterate than it was fifty or hundred years ago, and so is Burma, because the British administrators, when they came to India, instead of taking hold of things as they were, began to root them out. They scratched the soil and began to look at the root, and left the root like that and the beautiful tree perished. The village schools were not good enough for the British administrator, so he came out with his programme. Every school must have so much paraphernalia, building and so forth. Well, there were no such schools at all. There are statistics left by a British administrator which show that, in places where British administrator, so he came out with his programme. Every school must have so much paraphernalia, building and so forth. Well, there were no such schools at all. There are statistics left by a British administrator which show that, in places where they have carried out a survey, ancient schools have gone by the board, because there was no recognition for these schools, and the schools established after the European pattern were too expensive for the people and therefore they could not possibly overtake the thing. I defy anybody to fulfill a programme of compulsory primary education of these masses inside of a century. This very poor country of mine is ill able to sustain such an expensive method of education. Our state would revive the old village schoolmaster and dot every village with a school for both boys and girls" (Mahatma Gandhi speaking at Chatham House, London, October 20, 1931).

INITIATIVES IN THE VOLUNTARY SECTOR

Several educators from Gandhiji onwards have experimented and tried to make education relevant and liberating in alternative systems of learning. They have also tried to provide equity and quality in education by addressing their efforts to educate the marginalized child and providing needed skills and knowledge in stimulating ways.

Gijubhai Badheka and Tarabai Modak worked in the sphere of early childhood education. The Tilonia programme in Rajasthan, the Hoshangabad project of Kishore Bharati / Eklavya in Madhya Pradesh, Gram Mangal (an extension of work done by Tarabai and Anutai Wagh with tribal children) in western Maharashtra, the Bhandup project and Avehi-Abacus project in Mumbai's municipal school system are just a few examples of such efforts undertaken and sustained at various times in different parts of the country. Information on Bhandup project, Gram Mangal, and Avehi-Abacus project is given in boxes Nos. 1, 2 and 3 respectively.

Some of them like Tilonia, Hoshangabad and Bhandup were replicated in a large number of schools after their efficacy was proved in project modes. However though Tilonia and Hoshangabad models showed good results in the wider mode too, they were stopped because there was no political will to sustain them. The Bhandup project suffered neglect because a changed municipal bureaucratic regime could not be bothered to continue it. The Bhandup program continues to work well in districts where the district education officers are supportive. It is sustained by teachers who have seen how children come alive and learn enthusiastically with multilevel teaching, letting children move at their pace, providing learning materials made at low cost or no cost, peer learning etc.

None of these projects (except possibly the Bhandup one) are known as ET programs of enhanced learning but each of them displays most of the features of ET as described earlier, viz. specific educational objectives, appropriate methods and materials, accent on learning rather than on teaching. The Centre for Educational Technology (CET) a former institute of NCERT, in fact had funded the Tilonia project at its experimental stage as part of the Centre's ET program. Many teacher-training institutions also offer courses in different aspects of ET such as programmed instruction, individualized learning, microteaching etc.

EFFORTS INITIATED BY GOVERNMENT

Mass media like radio and TV have been used in a sporadic fashion for education for a long time. A worthy attempt was AIR's Vigyan Vidhi program to disseminate scientific information to students and teachers or project radio programs in Maharashtra and Rajasthan jointly undertaken by AIR and states concerned. However the supportive structures they needed could not be maintained for long. The first TV inputs in education did not have any worthwhile support systems.

The earliest systematic large-scale effort to run an educational TV channel was SITE (Satellite Instructional Television Experiment) that has been well documented both nationally and internationally. SITE covered 2400 villages (400 villages in backward areas of six states). It was at that time (1974-75) that the Education Ministry took up a scheme of Educational Technology. Under this scheme, an ET unit in the Ministry, an institute entitled Centre for Educational Technology (CET) in NCERT, and ET cells in the 6 SITE states were set up. Many innovations were undertaken in SITE (e.g. battery operated TV sets in Orissa, ½" video technology). For the first time agencies other than

Doordarshan such as CET or DECU of Space Application Centre (SAC) conducted formative and summative evaluation of programs they made. The CET launched a multimedia program of in-service teacher training that was highly successful.[2] (Please see Box No.4).

There was an excellent coordination between the state units and the CET for the first few years. Every program of the CET was directed in solving an educational problem or enhancing learning for well-defined educational goals; moreover they were related to education of marginalized communities. This vision was lost some time in the early 1980s. With new directives from the Human Resource Development Ministry (known earlier as Education Ministry) the close coordination between the state units and the central unit came virtually to an end.

Launching of Indian National Satellite (INSAT) in 1980 and its availability for educational purposes led Ministry of Education to concentrate on educational television programs for transmission via Doordarshan. The INSAT for Education was conceived as a tripartite project and was supported by UNDP, UNESCO and GOI; under its aegis an Educational Technology Division in the Ministry of Education was set up; the CET was merged with Dept. of Teaching Aids of NCERT and was renamed as Central Institute of Educational Technology, some of the ET cells in the states were upgraded to State Institutes of Education. ET cells were opened in some other states. Studios with adequate hardware for production were installed. The CIET was charged with the task of educational television and radio production, for undertaking training and research and as a central coordination agency for all production and utilization efforts. Along with SIETs it aimed at utilization of mass communications in a big way to meet various educational objectives. These projects provided an example of use of modern methods of media planning and application. Media and its application in education in an Indian situation have to recognize availability of software and access to hardware.

In 1993, CIET undertook its first teleconferencing experiment *Classroom2000+*. It was aimed at providing interactive teaching in Physics and Mathematics to groups of students in five distant locations of the country using television transmission, telephone and response keypads. An evaluation study showed that students found interactive television lessons comparable or even better than regular classroom teaching. Expert feedback pointed to the need for more examples, visual demonstrations, etc. for effective concept formation and a slower pace of presentation.

Extensive use of conferencing technology using television, satellite and telephone took root with the teleconferencing experiments in Karnataka and Madhya Pradesh (1995-96) as a part of the Programme of Massive Orientation of School Teachers undertaken by NCERT. Since then, the one-way video, two-way audio technology has been used regularly by IGNOU for distance education. A number of other agencies also use similar setups for training in panchayati raj, health-care, teacher training, etc. Gujarat State Council of Educational Research and Training uses the facilities of Video-conferencing in 17 DIETs and for teleconferencing in over 400 block and cluster level centres, running special programmes related to population education, adolescent education, integrated education for disabled children, apart from training in action research, and redressal of difficulties in content and methodology.

The project seems to have sub optimal achievement as after initial planning, support systems have been found lacking and the education system has failed to appreciate the usefulness of the media programs in their educational plans.

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[2] Evaluation studies by S. Shukla, Jagdish Singh and Suresh Batra 1976 and 1977; also report of Simon Maxwell of UNDP 1976.

TV and radio sets were supplied to schools over many years. AIR and Doordarshan were chosen as the carriers for broadcasts. As production and broadcasts started, equipment and personnel were put in place. So far as CIET and the SIETs are concerned, production of video and audio programs became their main work.

Narrow field studies showed encouraging results but the system failed to take root. Large-scale evaluations show gross under-utilization. Studies have shown that a link between the broadcaster and the classroom teacher has failed to develop. The audio and video programs do not indicate any definite patterns of suitability for supporting classroom transactions or supplementing them, either for particular age groups or for particular subjects.[3] The broadcasting organizations have their own priorities, allotting timings not always suited to the audiences concerned, often canceling these when other programming takes precedence. The institutions in government related to ET have been ailing for some time. Three committees have pointed out the problems that these institutions have been facing, but no effective action has been taken to revitalize them.[4] Under another scheme of the Ministry that was entirely equipment driven, between the years of 1986 and 1990, the Ministry distributed 2,28,118 radio cum cassette players (RCCPs) and 31,129 color TV sets to schools at the cost of several crores of rupees. However, as a study conducted by Prof. M. Mukhopadhyaya shows it did not yield desired results, as it did not go beyond providing of equipment[5] .

COMPUTERS IN EDUCATION

Indian experiments in taking computers to schools involved participation of a large number of institutions for tasks such as supply of hardware and software, development of computer assisted learning (CAL) packages and training of teachers. A project called Computer Literacy And Studies in Schools (CLASS) launched in 1984 was a joint initiative of M/HRD, Department of Electronics and NCERT. It covered 42 Resource Centers and 2582 schools. It made use of Microcomputers provided by the BBC. Evaluation of the project revealed need for greater interaction between Resource centers and project schools need to reduce time gap between training of teachers, installations of systems and initiation of activities in schools, adequate hands –on experience to teachers and students, and provision of computer literacy programs in the timetable. It had only a limited success, and has been described as at best a "spectator sport"[6] . A revised CLASS project in 1993-4 saw introduction of PC machines in keeping with broad global trends. Subsequently the govt. initiated CLASS 2000 program with the aim of providing computer literacy in 10 thousand schools, computer assisted learning in one thousand schools and computer based learning in one hundred schools. These 100 schools were called smart schools and were to be agents of change to promote extensive use of computers in teaching learning process. This too has not yielded expected results. In the words of Prof. Mallik, "Ambiguity of purpose, tentative policies and faltering practices marked the major computing initiatives in India during the last two decades…Schools are using IT as an add-on, not as an integral part of a new pedagogy"[7].

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[3] Studies by Dr. R. L. Phutela and Jagdish Singh in respect of Delhi television and Jalgaon and Rajasthan radio.broadcasts

[4] B.S.Bhatia Committee(1994). Kiran Karnik Committee(1997). and T.N.Dhar Committee(2004)

[5] M. Mukhopadhya et al: Utilization of media facilities in schools an evaluative study of the ET scheme of the Ministry of HRD. 1993. Prof. Mukhopadhyaya calls his study - not as a study of an educational technology scheme but as a study of utilization of media facilities.

[6] A study of CLASS. as part of a larger international study entitled Schools. Teachers. Students. and Computers: A cross-national perspective (1993) done by University of Twente. referred to in a paper presented to the group by Utpal Mallik.

Though all these interventions made some impact, where the schools and teachers went an extra mile to avail of the facilities provided using their own ingenuity, many of these schemes have been half-hearted attempts even at conceptual level. Computer literacy is not so much about knowing technical jargon but learning to use computers in a meaningful way – meaningful to children. Two programs illustrate this fact quite well. Information on one of them that media has named as The Hole in the Wall, and which uses the method of "Minimal Invasive Education (MIE)" is given in Box No.8; the second program was carried out by the TeNet group from IIT Chennai as a summer course of one month for students of class V.[8] What the government sponsored programs lacked was not only conceptual clarity but provisions for a number of other essential aspects such as students and teachers having easy access to computers, problems of scalability, timetable etc. None of these were discussed nor were solutions worked out. Without such clarity and preparation or machinery to make mid course corrections, these programs failed to make desired inroads; some were given up half way. In this void left open, in recent years many international corporations and Indian ones as well have entered the arena. Their programs have limited objectives. Box No.9 provides information on some of them.

3. EMERGING LESSONS FROM PAST EXPERIENCES

The lessons from the analysis of successes and failures are immense. Equipment driven programs do not work. In macro mode, in which broadcasts are used, unless there is an interactive mechanism, such as the teacher-monitor figure in the in-service multimedia teacher training programs of SITE or intervention by teachers, equipped with program notes or textual materials are essential. Radio and TV broadcasts are effective when the broadcast covers something that the class teacher cannot show or do in a classroom. The broadcasts have to fit in with the instructional design of an ongoing educational program that is designed to bring about change, with the broadcaster and teacher learning from each other. Both CIET and SIETs have made good enrichment programs that show what the class teacher would not be able to show; to that end they serve some purpose.

But any disseminative arrangement, however good, provides only limited gains because it only provides partial solutions to problems of an educational nature. Synchronous broadcasts also have some inbuilt faults. Often the planning of programs is too thin. What could be the contribution of one program a week in one subject and that too, when it has no different objective and functions than classroom teaching?

With smaller interventions things have worked fine at the peak periods but often problems arise in respect of sustainability. Projects become person-centric. They are dependent on a central authority that runs the schools. ***Good programs, held up as***

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[7] Prof. Mallik and Ms. Kamal Deep Peter both members of the focus group stated that though the SMART schools were to be a show case for educational innovation. the definition was watered down to the size of the infra structure of a school rather than the educational program it pursued. The quotation given in the text is taken from Prof. Mallik's paper "A Bit of history to learn from ..." presented to the group.

[8] The course on computers began with children painting whatever they wished. Then they wrote texts to accompany their pictures. They were then introduced to music. film clips. and graphics and were shown how these diverse things could be edited and combined with their paintings. What would they like to do? May be greeting cards for their friends. The idea caught on and it became a fun program. Computer literacy is not about mugging the names of parts of computer but in using it for one's own ends.

exemplars, are stifled because of their running foul of authorities with the power to close them down. When the colonial control mindset starts operating, innovations have no room.

An important lesson is that whether one uses low technology or high technology or micro or macro models ET solutions to educational problems is a matter of total fix. In other words, it is necessary to think up of a total system. An important point to remember is that for the success of even good TV or Radio programs, certain necessary conditions have to be met. First the program must meet students' needs; it must be such that teachers could use it as an aid; the broadcaster has to fit it in at a convenient time slot. The school has to fit this broadcast into the timetable. The production agency has to make appropriate programming available; post -telecast research has to support the production team and feed the data directly into program content. All these conditions will have to be met simultaneously, all the time, for such programming to achieve what its makers have desired. Any piecemeal attempt degenerates to tinkering and patches begin to show, much before the rust seeps out. Some of these schemes, especially at the macro level, have been half-hearted attempts even at the conceptual level and have failed where sharing of responsibilities by different agencies and ensuring that everything works in tandem is required. Constant evaluation and checking of systems are a must because if mid course corrections are required, they can be carried out.

The country has now reached a stage where education must take recourse to the discipline of ET in organizing education because the challenges that the country faces today are far graver than before; bringing about a sea change in education can be possible only if one takes recourse to using ET in micro and macro models, using any technology whether old or new that is appropriate. There is no other option if one is thinking of not leaving any child behind and providing learners with education that is high both in equity and quality. ET has potentials to make educational system flexible not only in teaching of subjects but also in examinations, in research, in systemic reforms and above all in teacher education. It would also provide a buffer against the homogenizing onslaught of the market economy on our culture and values by making peripheries much stronger than before and providing discerning media awareness. Let us consider the challenges we face.

4. CHALLENGES IN EDUCATION

Learning without burden, the report of the Yash Pal committee of 1993 has extensively reported on the ills of the present education system. Briefly speaking, it has shown how the education system has become highly centralized, examination driven, joyless, impersonal and utterly irrelevant to the child's world. The centralization deprives freedom to teachers to organize teaching learning, participate meaningfully in the preparation of syllabi or textbooks. That itself is bad enough but now in addition to what is happening in India, it has become necessary to face the challenges of the world that is changing fast.

Increasingly as the world shrinks on account of development in science and technology, it affects Indian society (and those of other countries too) in many different ways. These effects of a world that has now become a global village need to be taken into account in considering challenges for education. No society can imagine that it lives in isolation. This has a bearing on social processes in both the world and in India. This process has been on for some time but in the last ten years the pace at which the world has changed is highly accelerated. Some special features of this changing world are:

KNOWLEDGE EXPLOSION

A decade ago, the knowledge base of humanity used to double every 10 to 12 years; now it doubles every 2 to 3 years.[9]

Does it mean that there should be an even bigger load for children to learn? Or is there a way in which knowledge need not be served in packages of different subjects in schools? Could it not be woven in multi-disciplinary fashions around the questions that are of relevance and interest to the learners? Could we provide more open sources for learning than the traditional ones?

THE TECHNOLOGICAL EXPLOSION, A DOUBLE-EDGED SWORD

A very important factor of change has been technological explosion particularly in the area of information and communication technology. Such technologies are double-edged swords. They allow people to contact one another and exchange ideas very easily to create communities built around common interests and common causes. It also makes it possible for global corporations to move billions of dollars at the flick of an icon. That gives them tremendous power over local and national economies especially of third world countries like India. Democratically elected national governments of third world countries even big ones like India are no longer as sovereign as they were twenty years ago. With the profit motive as supreme, global corporations see human beings as consumers of their products and not as citizens with inalienable civic rights and duties. A byproduct of this phenomenon has been loss of the diversity in the biosphere, in cultural mores and the way we live. The world is getting homogenized.

HOMOGENIZATION OF THE WORLD

Aggressive advertising campaigns for marketing and controlled media are tools that the corporate World Empire uses to turn the public opinion around to suit their agenda by what Noam Chomsky calls '*manufacturing of consent*'. As mass production leading to profits means mass consumption, the global corporations like to disinvest the world societies of diversities and pluralities, something that India has always cherished as a high value. The more homogenized the communities of the whole world are, the more effective their media and marketing reach can be. Multinational giants therefore pose a threat to diversities of the environment and of culture. The consumerism they help to cultivate promotes a life style in which wasteful ways that the Earth cannot support become needs created by advertising. The scenario of competition leads to aggression and violence, which strip human beings of the essence of humanity— living in cooperation and harmony with others and the surroundings.[10]

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[9] UNESCO document: ICTs in Teacher Education. It records that 7, 000 scientific and technical articles are published each day, and data sent from satellites orbiting the earth transmit enough information to fill 19 million volumes every two weeks.

[10] A book entitled Para Leer al Pato Donald, written by Ariel Dorfman and Armand Mattelart has been translated into English under the title How to Read Donald Duck, by David Kunzle in 1971. It makes interesting reading because Allende's Chile had banned American comics that promoted values like one-up-man-ship as destructive to Chile's culture. Donald Duck selling an island over which it had no claim to a person was a no-no for Chilean culture. It created a furor in the American publishing industry. The ban made sense in Allende's time. Now of course with satellite TV anything can come into one's house against which the only weapon we have is to make our children discern what is right and what is wrong.

This lethal attack of the corporate empire needs to be met by socializing the young with democratic values and the sense of discernment to choose the right ways towards a better world. The Internet and open sources that are now becoming more extensive and available would help break the corporate monopolies. There is no end to the thirst of the corporate empire for power and control. For example, earlier the General Agreement on Trade and Tariff (GATT) focused on lowering of tariffs and quotas. Now the WTO has widened its sphere of control by introducing General Agreement on Trade in Services (GATS). This covers not only services in production sectors (e.g. banking, transportation etc.) but also essential social services like healthcare, education and drinking water. In many countries including India provision of these essential social services to its citizens is seen as the function of the government. In the nineties, under the pressure of the World Bank (WB) the Indian Government had accepted WB's structural adjustment program and diluted our Constitutional directive of free education up to 14 years. Acceptance of GATS provisions even in a few sectors would mean that education is to be treated as a commodity. This is an onslaught on human values and on the very core of our nation. The pressure to make India accept GATS is mounting and time seems to be running out.[11] Such acceptance would have disastrous effects. Privatization has already made both healthcare and education a highly profitable business; to local profiteers, there would now be global profiteers[12] . Small countries that hoped to beat WTO at its game by joining in its game have been unable to do so[13] . These corporate global forces backed by military might of the super power are extremely powerful and unless people are enabled to take power in their hands and connect with similar communities across the world the corporate empire would do pretty much what it wants.

In this connection, the focus group saw two electrifying presentations about enabling people. One was from Pastapur where women jeopardized in multiple ways (dalit, semi-literate or illiterate, poor farm laborers) from 70 villages organized in Sanghams have linked up food security, with many social and educational concerns and used educational technology as a weapon for attaining equity, preserve human dignity and for development. Please see Box No. 5 for a brief account of what they have done. The second presentation was about the work being done by a group of engineers from IIT Chennai to provide technology that is cheaper and suited to Indian condition, to enable people to access information and better their lot. Please see Box No. 7. The new technologies used in the right way can enable people to be empowered and educational technology can thus become a tool in this struggle, which is breaking out all around us. The Internet and Web provide alternative sources of information and connectivity all over the world to people that have similar interests and concerns. This could help in creating several power centres in the peripheries that would correct the imbalance of a central rule in every sphere, including education. It would then become possible to look at knowledge not as something that comes from a central source but from all around us.

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[11] Globalizing Education: Perceptions and Processes, edited by Prof. Sharad Behar and published by Indian Institute of Education Pune 2005 pages 14,15 and 16.

[12] Ellen Gould of GATSWATCH estimates that for corporations healthcare and education represent a combines $5.5 trillion market worldwide. Source www.citizen.org/trade/wto/gats/inde

[13] Arun Nigavekar: GATS and Higher Education: What is at Stake for India 2003, a UGC monograph. Nigavekar says, "New Zealand has opened up their education sector completely and without any restrictions. The belief that liberalizing trade in education services would enable New Zealand's companies to expand on the vast global market proved to be wishful thinking. The protectionist attitude of great powers including USA and Japan did not allow this to happen. Indeed there is every danger that New Zealand may loose control over their educational system in favour of large transnational corporations".

POPULATION EXPLOSION

Another important factor of change is the population explosion. Globally the population has increased several folds but the strange fact is that while the population in the developed world is decreasing, it is going up at a phenomenal rate in the developing world. A special feature of population explosion in India is that it has one of the world's youngest populations. Further, in the next decade, it is expected that over half of these young people would be below twenty years of age.

This number itself will pose one of the most unprecedented challenges, and we have nowhere to look for a solution, as no country in the history of the world has ever had to face this problem. Given our track record in bringing children to school, keeping them there and ensuring a decent attempt at education, conventional solutions will not suffice.

Providing large-scale access to all sections of children including that 10% or so who are disabled is a big challenge, especially when education must be equitable and of good quality.

SCARCITY OF RESOURCES

In the absence of assured access to other support sources and materials – libraries, databases, teaching aids, audiovisual materials – textbooks have come to play a larger than life role in the teaching-learning process. Textbooks combined with examinations that test what is memorized from textbooks have exerted a stranglehold and have thwarted any attempts at curricular reform, and has even undermined the goals of education.

How can educational technology be harnessed to address this gamut of problems?

5. HOW CAN ET BE USED IN TODAY'S CONTEXT?

First, it is necessary to divest ourselves of the notion that ET is mass media or computers; no program that is only equipment driven works well. Our institutions have become graveyards of a lot of useless equipment. We cannot afford to be as wasteful as we have been in the past and spend money on equipment without considering whether what we are buying is appropriate for the task in hand and for the use of which supportive systems can be quickly set up. We must also realize that knowledge springs from many sources and whatever is of importance in the learner's environment and suitable for his/her needs is what we must find out and use it in any teaching learning systems by using effective instructional designs. Considerable experimentation would be necessary and appropriate technologies for these designs have to be worked out. The primary goal has to be an educational one. And to reach it might be necessary to tackle it by breaking it down into specific educational objectives. The same problem may exist in different localities and cultures. The systems that ET specialists (teachers, parents and educationists) would have to think of would therefore be diverse. Efficient teaching learning systems at every level that use available sources, appropriate technologies and processes, which are flexible to effect changes based on observations and evaluations are the needs of the day; further, one should stop looking at knowledge as a packet to be delivered but take topics at least at the earlier stage of education from what is relevant to the child in its environment and let both teachers and children build a teaching-learning program that is multi disciplinary. The saying of Jesus, "There are many mansions in my Father's house", is true in the case of ET systems also.

The vast numbers that need to be brought under educational systems pose the problem of scalability. Here the new technologies and mass media can help but they must be woven into the system in such a manner that they give good results. Interactive rather than disseminative programs are desirable. This expertise needs to be built up. The Internet and Web provide other sources than local ones. But it is necessary to inculcate media awareness in our children so that they do not replace the words of tradition by the mantras of advertisers. They must know that nothing is value-free (not even Donald Duck).

A big responsibility for this change falls on the shoulders of teachers. The discipline of ET is an enabling discipline for making teaching of any subject more efficient and effective for the goals for which the subject is being taught. ET is not a subject of any syllabus except in teacher training institutions. Information with respect to the ET needs of curriculum have been passed on to the Focus Group on Teacher Education. Networking of teacher training institutions and universities that offer ET courses is necessary.

Building alternative systems of education in addition to schools is the need of the day. Whatever alternative systems exist on ground need to be made less bureaucratic in their operations and reoriented to carry out their tasks more efficiently. Alternative models of education, distance and open learning models, on-demand education and such other flexible models of learning, will have to be tried and established. Flexible systems, futuristic curricula and a 21st century career orientations have become a necessity for today's young people. Conventional definitions of livelihood options are too limited to cater to such a large populace.

6. THE ET FOCUS GROUP'S PROPOSALS FOR ACTION

What are the things on which we could leverage? A vast number of institutions (almost 700) exist with ET components in one form or another - CIET, SIETs, state ET cells, SCERTs and more than 450 DIETs. Regional Institutes of Education (RIEs) of the NCERT also have ET cells. Further many institutes of higher education (e.g. Tata Institute of Social Work, TTTIs) also have media units. More that 250 Universities offer education as a subject. Many have educational technology as an optional subject to B Ed and M Ed courses. Under Consortium of Educational Communication set up by U.G.C., we have a network of 17 EMRCs and AVRCs spread across the country. They have good facilities for making programs and their mandate includes teacher education too. Several state open schools, the National Institute of Open Schooling, several state open universities, the national open university, IGNOU and the distance education departments of conventional universities all have facilities to provide learning through alternative modes. All of them suffer from authoritative exclusionary traditions. They must learn to collaborate, share and revitalize themselves in the new scenario of education that the future will bring. The group proposes that serious thought be paid to make these institutions more effective and geared to the needs of providing equitable and high quality education with access to all.

RE-USING PROGRAMS FOR INTERACTIVITY

Many organizations like CIET, SIETs, AVRCs and EMRCs as well as many other organizations like Tata Institute of Social Sciences or Centre for Learning Resources for instance have made some excellent programs. The number game in which organizations like SIETs are caught up prevents them from reusing their old programs or programs of other institutions.[14] One of the most productive SIET has been Balchitravani of Maharshtra. It has a stock of nearly 3000 programs many of which are of good quality. Starved of funds it has been finding money by sale of its programs. They have earned several lakhs of rupees by selling their programs. Some of its programs such as 'Get to know your trees' could easily be dubbed in different languages and re-used. Reorientation of such institutes and bringing them under a network is highly desirable. Many of the Balchitravani programs need to be digitalized or they would be lost. Reorientation and strengthening of these institutions would not happen if action is not taken on war footing.

INFORMATION COLLECTION

There is as yet no aggregating function assigned to any institution either for programming or collecting data in respect of innovations or assessment of their worth. Many institutions not only at the central level but also at district/state levels too could consider taking on this role. Programming for built-in interactivity is the need of the hour and data on such programming needs to be collected.

USING SATELLITE, DTH AND OTHER TECHNOLOGIES

Another leverage that one could explore could be the use of satellite. India is perhaps the only country with a satellite completely dedicated to education, the EDUSAT. The present configuration of its structures is at variance with its declared aim of reaching backward areas and marginalized populations but it frees educationists from the dictates of Prasar Bharati which on one hand declares itself as a social service but on the other demands money from educational programmers as if they are advertisers of commercial products. EDUSAT has a limited capacity for interactivity, but it would enable a new type of programming that is better than disseminative programming. Developing interactive skills and programming could be one of the good programs for ET for which a lot of R&D would be necessary.

It is desirable to explore the possibility of an educational channel that is both educative and entertaining. There is certainly a felt need for it[15]. In fact using the DTH (direct to home) technology of Door Darshan, it might be possible to provide such a channel that could also provide room for community television in different languages. There is certainly no dearth of good materials (documentaries and educational programs). both in public and private domains. DTH now reaches the entire country and provides all public radio and TV channels and also free to air foreign channels. The extra cost is of providing a dish antenna that costs about Rs. 3000.

Other resources that we have on ground are a well-established publishing industry, desktop publishing, know-how and capabilities in producing kits, teaching aids, etc.

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[14] The HRD Ministry gives money for programming on the basis of Rs. 30,000 per program. As SIETs are starved of funds, they prefer to make new programs.

[15] A PSBT (Public Service Broadcasting Trust) documentary aired on Door darshan, entitled *Beyond Monarchs and Merchants* reveals concerns of parents about the mindless fare that soaps provide. Even unsophisticated viewers said that the stories soaps tell are nothing much to speak of but they watch because there is nothing else. They complained about the ill effects of the ads that accompany soaps, as their wards want what the ads show. As the success story of Hyderabad Book Trust shows there is a definite hunger for education. Its books even on serious subjects are now in several editions.

We have production capabilities for audio and video, multimedia, broadcast channels, Internet connectivity, trained manpower and institutions with these mandates.

If only we start using these resources in efficient teaching learning systems, a lot can happen and show us a way to proceed further to provide large-scale access to all sections of children, even those out of school and the disabled.

SPECIFIC PROPOSALS FOR THE SCHOOL SYSTEM

A paradigm shift has to be made in the notion of the teacher's role. She has to move from "teacher" to facilitator or guide. This implies an emphasis on learning culture rather than on technology. One of the key terms to be kept in mind here is flexibility, as appropriate utilization of the facilities and growth would be impossible without it. We felt that we have to give special attention to continuing education of in-service teachers. The suggestions that arose in our discussions:

Revitalizing and reorienting existing resources

Despite the charge of repeating, the group feels that it must emphasize that while the macro attempts of the disseminative media have had limited effects, it has led to the establishment of a number of large institutions and facilities, nation-wide networks, trained, professional and creative manpower in the area of ET. The challenge before us is to work out appropriate modes of re-engineering so that they can become a potent system.

These institutions will have to play fresh roles. Apart from their role in producing audio and video material they will have to be oriented for action research, documentation and assessment of innovative practices, undertaking in-service training of teachers, networking with nationwide efforts in education, evaluation research, developing models for interactive classes, interactive multimedia, teleconferencing, video conferencing and in leading the process whereby materials can be generated by teachers, parents and children at every level.

Also, in recent times, ICT and the Internet have emerged as a dependable medium of interaction. Unlike the broadcast media, the Internet can facilitate the participation of the periphery in an eminently democratic discourse, which can be empowering. And if properly deployed, quality concerns hitherto forced by economic and power considerations to be confined to the haves can now be within the reach of the have-nots too. The need of the hour, therefore, is to recognize this potential, promote universal access, facilitate participatory forums and develop communities and interest groups. Left to the market forces, reach is bound to remain limited. The Internet can be a sound investment for continuous, on demand teacher training and support, research and content repositories, value added distance education and online campuses, aimed at increasing access, equity and quality of education.

The model of education prevalent today presumes the existence of groups endowed with abilities, knowledge and skills, which at times even subsumes right values, and who therefore acquire the mandate to educate. This separation of the centre and the peripheries has led to the alienation and disempowerment of large communities of people. The fact that we continue to invest on adult education, continue to grapple with dropouts, and also continue to deal with issues of provision even of minimum facilities can be traced largely to this chasm. Both for logical reasons and as a moral compulsion, strengthening,albeit shifting to multiple centres, has become a necessity. The issue of population alluded to earlier can only be met if we overcome the current centre-dominant thinking. The other implication of this idea is that knowledge is not centered at any powerful location, but is available everywhere. What constitutes education is an opportunity for every individual to develop latent abilities and skills, choosing her/his teachers and benefiting from chosen experiences. The problem of certification, standardization, recognition of what constitutes legitimate knowledge, who is a legitimate teacher and what abilities, knowledge, skills constitute legitimate education may all have to be looked at from drastically different perspectives.

In systemic reforms

Ensure that technology is used in an equitable and democratic manner to enhance the self-worth, self-image of the poor and the disadvantaged.

Counter the tendency to centralize; promote plurality and diversity.

Ensure opportunities for autonomous content generation by diverse communities.

Shift focus from fixed to flexible curricula with competencies and skills identified rather than specific factual content.

Deploy ET to enhance open education, which implies openness in curriculum transactions.

Work towards transforming all schools into ICT-rich environments.

Create opportunities for administrators and educational leaders in the school system to become ET-savvy and to be able to use ICTs competently.

In refreshing skills of in-service teachers

Create a system of lifelong professional development and support, especially to educational leaders and managers such as headmasters and principals.

Encourage ICT literacy for official and personal use to build comfort and later, creativity in educational work.

Support the development of and nurture teachers' self help groups / professional development groups on the ground and online.

Encourage and facilitate the use of media and technology-enabled methods of teaching-learning, also making it inherent and embedded in the teaching-learning process of teachers.

In pre-service teacher education

Introduce teachers to flexible models of reaching curriculum goals.

Introduce use of media and technology-enabled methods of learning, making it inherent and embedded in the teaching-learning process of teachers.

Train teachers to evaluate and integrate available materials into the learning process.

Enable trainee teachers to access sources of knowledge and to create knowledge.

The foremost of challenges is to put in place a system of lifelong professional development and support. This has to come about in lieu of a one-shot, touch and go interaction, loaded with theory and almost no practice, which the present teacher preparation programs have degenerated into. Even while we set out on this task, an immediate attention is needed at revamping the ET component of the course. Disjointed from the other components related to teaching learning, it fails to convince a teacher of her role in engineering the teaching-learning situation and to make it a more meaningful experience for both herself and her pupils.

In school education

Move from a pre-determined set of outcomes and skill sets to one that enables students to develop explanatory reasoning and other higher order skills.

Enable students to access sources of knowledge, interpret it and to create knowledge rather than be passive users. Help them develop a healthy skeptical attitude towards media content.

Promote flexible models of curriculum transaction.

Promote individual learning styles.

Encourage use of flexible curriculum content at least in primary education and flexible models of evaluation.Even within the confines of conventional schooling, helping children reach and remain longer will need to be addressed *differently*. Insights gained from various experiments at reforming the school climate point towards the need for systemic reform in the system and within the classroom. ET will have a significant role to play here.

In research

Create a framework to identify the generic skills (problem identification and troubleshooting for instance) needed for the new initiatives to be undertaken in ET.

Acquire knowledge on how learning takes place in ICT-rich learning environments, optimizing learning paths for learners with different learning styles coming from a variety of social backgrounds, including gender differences.

Examine possibilities of mobile technologies for learning purposes.

7. POSSIBILITIES FOR THE FUTURE

Computers are programmable devices. This very fact makes it possible for users to make demands on it. This implies two things; one that the computer ought to be capable of responding to the intuitive demands; and two, that the user communicates in a language that the computer can interpret. Most software tools are designed with specific uses in mind. While this allows a common user to concentrate on the task at hand, it is normally not flexible enough to respond to the differing demands of the user. Most computer education programs degenerate to teaching students the art of punching the right buttons, which ends up making them glorified data operators. The need is therefore to seek interfaces with the computer, to respond to the user's creative needs. 'Open Source' shows a way, providing access to the source code of software[16]. The creative potential of the computer and the liberating potential of the Internet can only be unleashed when we actively make these kinds of demands of these technologies. The students of the future should be oriented to this possibility, allowing them to stand their own amidst the technology mediated onslaughts of the modern world. Integrating ICT into education would require that these aspects of the technology be catered to as a whole.

Hitherto we have used media to pick up or beam out information depending on where we stood in the teaching-learning spectrum. Today, as learners we can use it to personalize our questions and to find the answers to our own questions as a matter of choice. As teachers we can find out what intrigues our learners and we can orient our approaches accordingly. Institutions with educational technology agendas will now have to keep on looking out to attract people and projects, functioning somewhat like lighthouses. They have to learn that their role is akin to that of an observatory or test-bed where new trends are sighted and experimented with. Or they will be frozen and rusted like the machines in many such institutions, of no use to anyone except to those with vested interests.

The different focus groups involved in this exercise are already seized with the way education could be made more meaningful and joyful and in accordance with the pace and potential of children in a changing world. The challenge of numbers, limited finances, knowledge explosion, the sword of corporate globalization and the politics of power globally and locally, will continue to haunt education unless a way out of this quagmire is found out.

Box 1: Bhandup Municipal School Project

The project is the brainchild of Dr.Kusum Kamat who had retired as the Education Officer of Mumbai Mahanagar Palika. The children in municipal school are almost always from marginalized classes. Knowing their difficulties, Dr.Kamat wanted to enable teachers to provide education that is multilevel, multi-graded, cooperative and fun. This she thought would be possible if teachers could become educational technologists, assess needs of each individual child and induce the student to learn at his/her pace, moving up when lower skill tasks are mastered to move to higher skills and cooperate with teacher and other children. To test her ideas two municipal schools in Bhandup slum area were taken up as pilot experimental schools for which CASP-PLAN gave her some seed money. The number of children in grades I to IV in these schools was 2000 and the number of teachers was 38.

After assessing different problems of these children in respect of homes, parental illiteracy, poverty, health problems, irregular attendance and low achievement, she looked at the problems that teachers faced. These related to large classes, with different achievement levels of children, irregular attendance, lack of interest in schooling (both parents and children) and no refresher courses for teachers. Kusumtai felt that if she could make teachers understand that even low achievers could become good students if education could be made interesting and the learning pace is set to suit the level of each child. If parents found that their wards were doing better, their cooperation would come in time. The teacher's role therefore was pivotal. How to make the teacher a facilitator, manager and organizer of instruction was the crux of the problem Learning materials were necessary and they had to be made from low cost or no cost basis because if the project was to be worthy of replication no extra money could be thought of.

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[16] The code used by the software to communicate the user's interaction, say the click of a specific icon, to the computer in order to elicit a specific response; usually written in a programming language.

Her teacher training program aimed at improving the understanding and efficiency of teachers and making them identify learning sources/experiences as per needs of pupils and their bents; teachers had to see that the children developed self-learning skills. It was necessary to prepare diagnostic tests to plan remedial measures, learn to organize learning situations to facilitate active participation of learners and plan/organize activities for students in such a way that they would give them opportunities to show their talents and increase their interest in learning and make them feel confident Establishing rapport with parents and find solutions for improving school attendance and seek cooperation of parents and community in school activities and their interest in their wards was also another important goal.

Once teachers understood that multi grade learning, freedom to move about in class and multilevel materials to suit the needs of children make children learn well, both they and children started enjoying what they were doing. The municipal corporation agreed to free teachers from teaching on Saturdays (that was in any case half a school day) so that teachers could spend their time in planning next week's lessons and prepare materials. Students often got waste material like bus tickets, cartons, empty match boxes which the teachers could use in making these materials. At the pilot stage, some money was needed for teacher training. But later when the pilot became replicable and was introduced from two schools to many more schools, it became possible to provide such training within the normal budgets of schools. The training consisted in exposing them to new techniques by way of demonstrations by resource persons or experts, visits, seminars, conferences. They were given scope to experiment new methods and report to others in seminars. This kind of planning helped them to solve their own problems. After evaluating the program, certain changes were made. The evaluation showed that teachers were enthusiastic, children were learning, attendance had improved and parental cooperation was becoming easier.

It was then decided to extend the program to 18 more schools. These had 165 teachers and 8500 pupils. In this phase too, it worked quite well and showed good results. The Municipal administration then took over the program and extended it to many more schools. But its vision was limited to more traditional type of teaching. Further there was more emphasis on cognitive learning. The training unit staff was also not able to train teachers independently. At the end of the first year, it was noticed that teachers were not motivated to change. The last phase is marked by work that was done to develop a multi media package of textual materials and video programs for training purposes. This package has helped experts to reach teachers independently of organizations, which have been in charge of elementary education. The package is now widely used in D.P.E.P. program and in those districts of Maharashtra where the district education officers like to help in bringing about a change in education.

More Information:

Dr. Kusum Kamat, 301 A Georgina, Rizvi Complex, Sherly Ranjan Road, Bandra West Mumbai-50, Tel. 2546 0712

Box 2: Gram Mangal Project

Gram Mangal established in 1982 works in the Adivasi belt of Maharashtra that borders on Gujarat state. When Anutai Wagh (who had worked for a long time with Tarabai Modak) and Dr. Ramesh Panse entered the area there was no drinking water, no electricity and no roads, let alone a school. The Adivasis were very poor and the two social activists thought that unless the villages become self-reliant communities, by undertaking development programs there was no way that conditions would improve. They started many development activity and later also concentrated on early childhood education as part of the development program. After working for three years on getting basic amenities like drinking water and roads, the work on educational program began.

Gram Mangal does not take any grants from the Government but supports all useful activities that the Government undertakes in the area. They also work in collaboration with other N.G.O.s The organization is supported by the larger community. Their educational effort is concentrated in Vikaswadis, teacher training programs, health programs and technical/vocational education programs. It also undertakes research programs. They now have several Vikaswadis in 9 villages. The curriculum is child-centric and related to the Adivasi child's environment. In the early years, the local Warli language is used and later Marathi is introduced. A lot of educational material both locally prepared and bought is used. The organization also maintains a bank of educational materials.

This project as well as the Pastapur project illustrates that close links need to be forged between development and education.

More Information:
http://www.grammangal.org/

Box 3: Avehi Abacus Project

The focus group paper talks about building knowledge content for young children in a multidisciplinary mode around what is relevant to a child. Those who have been brought up in the tradition of knowledge being given on terms of subjects may like to look at how an N.G.O. has been organizing it.

Shanta Gandhi who had been engaged for a long time in early education and Bal Bhawan work conceived in 1952 the idea of Abacus when she was working in village Nikora on the banks of Narmada. She started with the questions of Adivasi and non-adivasi children relating to their surroundings; in exploring answers to these questions through drama, songs, she began discussing various themes and topics like evolution, how life emerged, why we are what we are, and how we have reached here. In 1981, Avehi an audio visual research center was launched. In 1990, Avehi took up Abacus programme in municipal schools of Mumbai in phases. It now operates in 180 schools. The materials developed by the organisation have been extremely visual and attractive to both teachers and students like them. These are very welcome as the schools in slum areas have no libraries. These are directed to the age group in 5th and 6th classes and are in 8 languages used in these schools. The program is operated in 100 schools in Chandrapur and Yavatmal districts as well.

The materials are thematic and arranged around following topics: Myself, my body, and our needs. Understanding that I am unique; but so is every one of us but we share common needs so we are interconnected.

Understanding the world and web of life. It helps in understanding that the earth fulfills all our needs and our life binds us together – both living and non-living.

How societies developed? Where have we come from? This helps in understanding what we were, the mechanizations that get people together; understanding the society and its structures.

The way we live and where we are today. What is the role of social institutions like family, state, class or caste? What role do they play in our lives? How relevant are they? How do they influence us? Having understood them – what do we accept, reject or challenge?

Exploring changes- change is inevitable. We can either be passive and react to the change once it happens or if we understand change-learn how to be proactive, hasten a change that is good or resist a change that is not welcome.

Where are we going? What do I want in life? What will I be encouraged to do? What will take me further? What will determine my future and the future of the world around me?

The organization consciously works with the system and uses existing space and SUPW time to address these themes in one-hour sessions. First 10 to 15 minutes of introduction of an idea brought out through a story, flip chart. Then there is discussion or activity to connect what is discussed to their lives. There may be group activity or worksheets. These activities address the values such as working together respect for each other, dignity, respect for labor and all living things and peace. Children discuss issues by putting themselves in positions where they debate and come up with solutions

More Information:

http://www.avehi.org; "avehi abacus" used as search words yield more reports and documents on the web

Box 4: In-service Teachers' Training through Multi-media Approach (SITE)

Organized by the CET (Centre for Educational Technology) NCERT in 1975-76.

Educational objective: Show teachers that 'Science by doing' is a good method for teaching science and get them to practice it.

Educational problem: Science Dept. of NCERT had launched the program of introducing science from class 3, but primary school teachers – about 1.6 lakhs of them, did not have much idea about how it could be done. The summer courses organized could not reach this vast number quickly.

Availability of ATS 6 communication satellite loaned for a year by USA to India made it possible to beam television broadcast to backward areas. 2400 villages in backward areas of 6 states were equipped with TV sets. However as one way telecast of 22 minutes was hardly adequate to bring attitudinal change, it was decided that though the telecast would be used as a novelty and for providing materials that are not easily available, the training program would consist of multi-media in the form of textual materials, activities for illustrating how Science is doing can be taught (the real mainstay of the program), radio programs and radio vision programs. Interactivity was also essential. This was provided by having a facilitator (a high school science teacher who had received orientation in the multi-media package). Each medium was designed to fulfill a special task assigned to it in the instructional design of the course. All the materials were translated in different languages of the region and made available. Fail- safe alternative materials (in case the telecast failed on account of vagaries of electric supply) were also prepared.

Ten teachers from villages surrounding a TV village were invited to attend a two-week course at every TV village. Evaluation teams of CET sampled the attitudes and knowledge of teachers, prior to start of the course. There was summative evaluation as well[17]. The deficiencies noted were rectified in the second course. This time the course time was increased from 10 to 13 days and two groups and two teacher facilitators worked in 1200 TV villages. More activities were added. Similar formative and summative evaluations were done. Before the satellite footprint was drawn back from India, nearly 48000 teachers were trained in one year. The course was considered to have been successful in reaching its objectives as CET and SCERTs kept on getting letters from teachers asking for information. A study of retention of attitudes and practices was done six months later and it was found that a large number of teachers were teaching Science by Doing. Where they did not, it was more on account of administrative failures than the teacher's willingness. Many states continued to use the materials even after the telecast was discontinued.

Box 5: Using radio in an interactive mode

Using radio broadcasts in a multi media mode (viz textual materials, interventions by teachers) were done earlier (viz. in teaching Hindi as first language to Rajasthani children or children of Madhya Pradesh who used a variant of Hindi as their mother tongue). But in recent years several programs of using radio in interactive mode have been undertaken. Radio has many plus points: first, making audio programs for both broadcast and non-broadcast modes is a much cheaper proposition than video programs; second, audio is very suitable for language learning and third given the erratic power supply in urban and rural India, battery operated radios work quite well. One such program is being done by the Centre for Learning Resoures of Pune for teaching English to classes 5,6, and 7. Approximately 85 radio lessons each of 15-minutes duration are broadcast since 2001 three times a week using AIR as the conveyer. These programs were first broadcast in all urban and rural schools in Pune district. The programmes are being broadcast to Municipal schools of Mumbai from 2004. The Hindi-English version of these programs are being used in classes 4 and 5 of the municipal primary schools in Delhi too and from 2003, the program is extended to Jharkhand also fo[illegible] classes 4,5 and 6. The same program is broadcast once in the morning and once in the afternoon.

The program provides pauses for teachers and children to respond. They give opportunities to children during the lesson to speak in English and a variety of child-friendly formats such as drama, songs, and language games are used. The lessons also promote democratic values. Comparative studies show that after listening to 90 radio lessons children spoke far more English than class 7 students of the same school who were not exposed to the program. And after 3 years of radio interventions, rural students from class 7 spoke far more English and wrote better English than rural class 9 students who were not exposed to the lessons. Teachers have been quite appreciative.

Keli-Kali Radio programme in Karnataka (Govt. of Karnataka, AIR)

The project was initiated in 2000-01 in two districts (Raichur and Gulbarga) of North Karnataka to provide support to classroom teaching. About 2,50,000 Students of Grade III of 5000 schools benefited from the Broadcast from the two Radio Stations. The Process of development of radio lessons involved 1) identification of hard spots 2) teachers training in script development 3) development of scripts and editing 4) production of programmes by AIR 5) preparation of Teachers Handbook and orientation of BRCs and CRCs 6) training of all the teachers by the BRCs and CRCs 7) provision of funding by the State Govt. for purchase of radio sets/RCCPs and dry cells 8) discussion in CRCs meetings about stocktaking, reporting and sorting out the problems relating to ensuring listening of Radio Lessons 9) organisation of audio-conferencing with teachers and BRCs/CRCs for getting feedback 10) documentation and research to find the effectiveness of the project.

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[17] Studies by Snehalata S., Jagdish Singh, Suresh Batra of CET and Simon Maxwell of U.N.D.P

In 2001-02 the project was extended to 13 districts covering Grade III and IV students of about 14,780 schools. In 2002-03 the project was extended up to to Grade V in 2003-04 and covered all the 49,640 Schools. In all 258 Lessons relating to EVS. Kannada and Mathematics were broadcast In 2004-05 it was extended to Grade VI.

Radio Broadcast in Andhra Pradesh and Himachal Pradesh

Vindam Nerchukundam (Let us listen, let us learn) in Andhra Pradesh, similar to the Keli Kali programme, was begun in Vishakpatnam in 2002 for Grade III students. In 2003 it was extended to Grade IV and in 2004 for Grade V. The programmes were broadcast from 4 AIR Stations. The programme benefited about 29 lakh Students and 1.5 lakh Teachers.

Similarly in Himachal Pradesh, a radio broadcast with the title Gyankalash was initiated in the year 2000 for students of Grades I to V during evening hours.

Interactive Radio Instruction in Karnataka, Chattisgarh, Jharkhand and M.P

A USAID funded project, organised by Educational Development Centre, this Project is similar to Keli Kali, but included interactivity during the programme. It was implemented in 2004-05 in two blocks (50 schools in each block) of North Karnataka, 72 Schools of Bangalore and Chamarajnagar District. Unlike in Keli-Kali, experts in discussion with teachers developed master plan, and scripts. Production was done by the production agencies (Private). Programmes were subjected to formative evaluation. Multigrade approach was adopted and aimed at grade IV and V students. A strong research component (Pre and post test design with qualitative data from schools) was included. The subjects covered are Science, Social science and Mathematics. A total of 72 audio programmes have been developed.

Almost all the steps followed in the IRI programme of Karnataka is followed in Chattisgarh and Jharkand too. However the radio broadcast is for the Grades I and II students. Three Blocks are covered in each State. The programme began in the year 2004-05. Radio sets were supplied by EDC. In Chattisgarh a total of 115 programmes will be broadcast by 15th March 05. In case of Jharkhand a total of 86 Programmes will be broadcast. 28 audio Programmes are being broadcast during this year in Madhya Pradesh.

Box 6: Enabling people through educational technology – the Pastapur effort

The Deccan Development Society, DDS is a two decade old grassroots organisation working with women's Sanghams (voluntary village level associations) in about 75 villages around Zaheerabad in Medak District of Andhra Pradesh. The 5000 women members of the Society represent the poorest of the poor in their village communities. Most of them are dalits. The Society has a vision of consolidating these villages into vibrant organs of primary local governance, and federate them into a strong pressure lobby for women, the poor and the dalits. This vision is being translated into a reality, through continuing dialogues, debates, educational and other activities with the people, facilitated by the Society.

Over the years, the programmes have evolved from meeting the simple sustenance needs of the sangham members to empowering them in order to address the larger issues of food security, natural resource enhancement, education and health needs of the region. The integration of various activities is intended to retrieve women's natural leadership positions in their communities, and to fight the lack of access of control over their own resources. These activities, alongside ensuring earthcare, preserving useful traditional knowledge, are also resulting in human care by giving the women a new-found dignity and profile in their village communities. The activities of DDS has assumed various forms, which center around the principle of autonomy of the local community – autonomy over food production, autonomy over seeds, autonomy over natural resources and their management, autonomous markets and autonomous media.

The initiative aimed at autonomous media is particularly relevant in the context of the focus group's suggestions. Transcending the barriers of non-literacy, the DDS group of women have produced successful videos to raise dialogues with their sanghams and inform the outside world of the accomplishments of their fellow women. A stunning film, Why Warangal farmers do not like BT Cotton? on the ills of genetically modified cotton seeds, produced by these women has been showcased around the world. Their compelling statements on why they should have a media of their own is forcing the academic and development world to rethink media policies. The women have also established a Community FM Radio Facilities, controlled and operated by them. Grouping themselves into a rural women's media collective, DDS Community Media Trust, the women have been taking up social issues and concerns, video documenting their findings, with their own original perspectives. These films have featured in many international meets and the group has worked with international organisations in training similar women's communities in third world countries like Bangladesh, Sri Lanka, Pakistan and F[illegible]

DDS also runs Paccheshale, an alternative school and the Sanghams run 40 Balwadis. Speaking to the women, one realises the power, autonomy has unleashed in the minds of these people and showcases an alternative way in which education and development can be thought of, not being bogged down by narrow definitions revolving around literacy.

More Information:
http://www.ddsindia.com

Box 7: Internet connectivity for Indian villages

TeNet group of IIT Madras along with n-logue communications private ltd. Chennai has a commitment to provide Internet connectivity in villages of India and use that to drive education, health, and livelihood in connected villages. It uses indigenously developed corDECT Wireless technology to provide connectivity to the village. It finds a local entrepreneur in each village and helps him/her to set up low-cost Internet kiosk and provide services in these villages. The total cost of the kiosk is Rs. 50,000, which includes wireless connectivity, computer, printer, power back-up, camera, and local language software as well as training for the kiosk operator and six month's unlimited Internet charges. The operator needs to earn Rs. 3500 every month to break even. The kiosk provides multiple services to in the village to earn it. Today n-logue has over 2000 kiosks in about 30 districts in different states.

One of the main services provided in the kiosk is education. Besides computer training, courses at various levels and utility courses like "how to make a bio-data" and "how to take good photographs", a major emphasis has been coaching children to pass SSLC examinations, especially for subjects like English, Science and Maths. Online courses are aimed at children to learn the subjects, practice for the exams and also take mock tests (which are graded) to prepare for the SSLC exams. Besides some online live video lectures (with interactivity) are provided with the aim of putting some of the best teachers in front of the rural children. At the same time by popular demand a course on spoken English is being run for rural children and is very popular.

The group is very conscious that education in rural areas through Internet kiosks is in its infancy and it needs to do more.

More Information:

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Box 8: The hole in the wall-Demystifying computers

Children learn to use computers fast if they are allowed to play with it. Dr. Sugata Mitra of N.I.I.T. was surprised to see how fast his 6 year old son learnt operations of computer just by watching his father. That led Dr. Mitra and his colleagues to build a computer into a wall near their office in Delhi. The screen was visible from the other side of the wall. They built a touch pad too within the wall. Children came running out of the nearest slum and stuck to the window like glue. A few hours later they found that the children were surfing. Within six month's time, they had taught themselves many computer operations. How did they do it?

Dr Mitra observes that in playing with the pad and mouse, an accidental discovery made say curser changing to a hand shape when a child hits Graphical users surface. Others repeat by learning from the first child. Most of their learning is by such discoveries; they verbalize it in their own way. This vocabulary encourages them to perceive generalizations e.g. "when you click on a hand shaped cursor, it changes to the hourglass shape for a while and a new page comes up".

They memorise entire procedures for doing something, for example, how to open a painting program and retrieve a saved picture. They teach each other shorter procedures for doing the same thing, whenever one of them finds a new, shorter, procedure. The group divides itself into the "knows" and the "know nots". However, they realise that a child that knows will part with that knowledge in return for friendship and exchange as opposed to ownership of physical things where they could use force to get what they did not have. A stage is reached when no further discoveries are made and the children occupy themselves with practising what they have already learned. At this point intervention is required to introduce a new "seed" discovery ("did you know that computers can play music? Here let me play a song for you"). Usually, a spiral of discoveries follow and another self- instructional cycle begins.

Within the next 6 months, the children of the neighborhood had learnt mostly on their own all the mouse operations; they could open and close programs, surf the Internet and download games, music and video. When asked they said they had taught themselves. They were describing the computer in their own terms, often coining words to describe what they saw on screen. The hourglass symbol was "damru" , the mouse cursor, "sui" or "teer". The media gave it lot of publicity. Dr. Mitra and his colleagues ar N..I.I.T call it Minimal Invasive Education (MIE). The media described it as The Hole in the wall. That name has stuck.

Funding and requests from different governments came. Now in several places in Delhi, in M.P., in Maharashtra and even in Cambodia the program is operating in many places. The funding has helped in trying the experiment out in diverse human and climatic conditions. Wherever they found an appropriate place and a friendly panchayat or school, they built a little structure with three computers facing the road. That design is now the standard design for the hole in the wall. To resolve the problems of dust, power supply, adults taking over etc. a number of modifications were made. And the N.I.I.T. people are confident that their computers would work anywhere. If a computer went into a hang in a remote village in Kanyakumari, the N.I.I.T. software enables NIIT scientists to "see" their computers from anywhere through the Internet. Their new software ensures that nothing would be deleted by accident. By keeping the window low, adults are prevented from using the computers. In 26 locations, with 100 computers standing in remote villages, observations were done. Focus groups were tested for nine months and the results compared with control groups and other frequent users. An estimated 40,000 children use these computers. They have all made themselves computer literate. The average icon test scores stand at 40% in nine months. Dr. Mitra and his colleagues now have their proof of self-regulated learning and are confident that such learning will happen anywhere in the world, to any child, in any climate. Egypt and South Africa have now borrowed this technology.

Dr. Mitra says that Groups of 6 to 13 year old children do not need to be "taught" how to use computers. They can learn by themselves. Their ability to do so seems to be independent of their educational background, literacy levels in the English language or any other language, social or economic level, ethnicity and place of origin, ie, city, town or village, gender etc. Pornographic surfing is quite rare. Teachers have often recorded gains in enrolment, attendance and school examinations, particularly in subjects that deal with computing skills,English vocabulary and usage, concentration, attention span and problem solving and above all in working together and self-regulation.

More Information:
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Box 9: Computer Education Initiatives

This sector has more or less remained outside the institutional framework. Although the Universities and accrediting agencies stepped in to bring in a level of standardisation, two features of this new technology have defied all attempts at stability. As a technology, it is one of the most rapidly changing ones, requiring drastic upheavals in basic understanding. Time scales have shrunk. The second aspect of this technology is the impetus it provided to a variety of applications in a diverse market, creating jobs which were hitherto unheard of. Makers, users, marketers and a host of service providers have found avenues for employment both in India and abroad. This in turn has catalysed the inflow of capital, fuelling an upsurge in infrastructure and services.

India, having taken an early initiative in the area has emerged a leader in the IT arena. Conventional regimes of setting up and running courses cannot meet the demands of this job market. Led by a few private initiatives like NIIT and Aptech, a number of institutions offer an enormous range of short and long term courses, rapidly responding to changing technologies and market trends. The inbuilt openness of the system they have evolved, has also allowed professionals to keep pace with modern trends, re-skilling themselves in specialised hardware, software and applications. The courses themselves are at different levels, enabling the novice user of software applications and the expert programmer to pick and choose. The Internet and the publishing industry have also pitched in, making available one of the largest, constantly updated libraries, accessible to everyone desirous of benefiting from it. The computer education industry has demonstrated an ability to rapidly respond to changing needs, setting up need based courses, skill based certification mechanisms, generating peer tutors and teachers, all of which may have implications for education in other spheres as well, especially in the light of our attempts at education for all.

Corporate Initiatives in ICT for Schools

Recognising the immense potential of ICT as a job market, many State Governments have taken initiatives to introduce students, especially in the high schools to computer education. Some of these initiatives have gone beyond basic computer literacy, and are trying integration of computers into education too. While it is too early to attempt any meaningful impact assessment, a heightened interest and innovation are discernible. A variety of private-government partnerships have been tried and a large number of corporate houses and NGOs are participating in it. Some of these initiatives are described below.

Technology Initiatives by Azim Premji Foundation

A combination of aspirations, desires and perceived benefits resulted in over 10,000 elementary schools in India having access to computers. While these contributed to heightened expectations, lack of appropriate content for children in local language put a damp blanket on their effective utilization. Azim Premji Foundation has begun creating content on CDs to meet this requirement. With the child as the main player in the story, through the medium of animated cartoon, the CDs aim to attract and retain interest of children in learning. 40 minute modules in local language with option in English and Hindi to make Learning Play and Assessment Fun are created. The modules relate to competencies that the child is taught in school like language, math, and science and co-curricular topics to expose the child to urban environment like fan, telephone and television. These modules are used as supplement to class room teaching. To facilitate effective use of this content in schools, a detailed training program for teachers on Computer Aided Learning was developed and conducted in partnership with state governments. As of January 2005, there are 69 titles for children in the classes I to VIII. Each title has three language options – regional language, national language Hindi and international language English. The content is available in 8 languages – Kannada -64, Telugu-42, Tamil-35, Urdu-18, Oriya-6, Gujarati-4, Gurmukhi-3 and Malayalam-1. These titles are being used by children in over 4600 schools across the states in India.

Mahiti Sindhu Programme in Karnataka

This programme was initiated in 2000 and is being implemented in about 1000 Secondary schools. The State Govt. pays three institutions (NIIT, APTEC, EDUCOM) who in turn take up the responsibility of training teachers and maintaining computers in schools. Each class gets four periods per week. 5 computers with one server was provided to schools with a strength less than 150 students, 150- 250 students got 9 computers with one server, and 250-500 students were provided 14 systems. Subject Based CDs were supplied by the agencies.The project evaluation is being carried out by an outside agency.

Similar initiatives are also being taken in Schools of Andhra Pradesh, Kerala, Delhi, Madhya Pradesh and Chattisgarh.

Head Start Programme in Madhya Pradesh

The Computer aided learning in Madhya Pradesh was started 3 years back. Now there are 2718 Schools covered in the Head Start programme. Each School has been given minimum of 3 Systems with back up power of 3 hours. The centers are located in clusters Centers (housed in Primary school buildings). The CDs are developed by the Rajiv Gandhi Shiksha Mission, Bhopal and distributed to all the schools. The Programmes are developed on the hard spots identified by the teachers. The Mission has trained the teachers of these schools for effectively using the CDs in the classrooms. The topics cover all the subjects being taught in the Schools like science, Mathematics, Social Science. English, Hindi. The Programme is interactive in nature and has inbuilt self evaluation. The Research conducted recently claims significant gains in Mathematics, followed by Science, Social Science, English and Hindi.

Computer Aided Instruction in Kerala

The IT @ School Project was started in Kerala as a Computer Aided Project in 2003 for the benefit of Grade VIII students. During the last two years the project has been extended to Grades IX and X. The state has developed syllabus for computer Education. This project is implemented in about 2735 Schools. About 25,700 Computers Systems have been provided. Three students share one system. In the allotted four hours per week, 2 hrs are spent on theory classes and 2 hrs for practicals. Students take online examination The funding for this project has come from different sources including MPs/MLAs fund. So far about Rs 18 crore have been spent. Each student is charged not more than Rs.25 per month, and in case of SC/ST students the State reimburses the amount.

Maharashtra Knowledge Corporation

Higher and Technical Education Department (HTED), Government of Maharashtra appointed Professor Ram Takwale Committee in January 2000 to offer recommendations on universalization and integration of IT in all the institutions dedicated to Higher and Technical Education in the state. The Committee submitted its report to the Government on April 25, 2000. The Committee recommended creation of a special purpose agency viz. Maharashtra Knowledge Corporation for speedy, effective and self-supporting universalization and integration of IT in Higher and Technical Education in the state. Government appointed a Special Working Group to implement the recommendations of the committee.

A unique partnership arrangement, where individuals, organisations, both private and government and educational institutions participate as equals has been initiated. The flag ship course of the corporation, MS-CIT (Maharashtra State Certification in Information Technology) program is a joint venture of HTED, Training Providers and Educational Institutions initially in about 425 different Educational institutions i.e. in ITI's; Arts, Science, Commerce, Law, B.Ed. Colleges; Engineering Colleges and Polytechnics, etc. MKCL is venturing into other courses too, one of them being teaching of English in schools, for which SNDT University is developing multimedia materials.

The corporation aims to develop into a world class, globally competitive, flexible and value based education system responsive to the individual, institutional and social development needs of the people of Maharashtra and India. Their mission is to integrate in a self sustainable manner IT education and IT enabled education with the basic teaching, learning process and its management, so as to accomplish the Goal of preparing graduates for the knowledge-based economy, champion the cause of life long learning and stimulate the creation of world class resource through IT.

Intel Teach to the Future

The Intel Corporation has initiated a programme of Computer Aided Instruction, in coordination with 12 State Governments, the Kendiya Vidyalaya Sanghatan and the Navodaya Vidyalaya Samiti. The programme aims at Professional Development program for in-service and preservice teachers. The course helps teachers use technology in support of project-based learning and to encourage active inquiry and higher-order thinking. Participating teachers receive extensive training and resources incorporating Internet, multimedia, and assessment tools aligned with the local board curriculum framework. More than 4,00,000 teachers have been trained so far since the program started in Feb 2000 in India. Apart from this direct initiative of computer education, Intel has also started a National Science Fair aimed at infusing the spirit of discovery in school children and increasing their interest in Science and Mathematics. It allows students to improve scientific aptitude and experiment with every day problems and find scientific solution to them. It's a platform for Indian students to showcase their talent and win public recognition and awards. Intel affiliates with various state government science exhibitions/ fairs and selects 2 projects from each state for the national fair every year, providing opportunity for government school students to compete at national and international level. Intel India has joined hands with a few educational and social institutions in India for supporting community needs, which includes a Technology Training center at Bhartiya Vidya Bhavan, Hyderabad, with the objective of providing job-oriented training to students and unemployed youth; the Cyberskool Program,started in association with the National Council of Science Museums the program aimed at providing training to people who do not have easy access to technology; and a Technology Training Lab at the National Association for the Blind, Delhi that offers basic courses in computer usage and screen reading software for the visually impaired.

Microsoft's Project Shiksha

According to Microsoft, this project aims to accelerate computer literacy in India by providing a comprehensive program which includes software solutions, comprehensive training for teachers and students, development of world class IT curriculum and scholarships for teachers and students. The teachers are exposed to an IT literacy curriculum with the key objective that they go back and use IT interventions in their teaching.Over 80,000 school teachers and 3.5 million students across government schools will have an opportunity to strengthen their IT proficiency through this initiative over the next five years.

Launched in Dehradun in Uttranchal and training hubs of the Navodaya Vidyalaya Schools (NVS), the project has MOUs with the states of Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka, West Bengal, besides Uttaranchal. Microsoft Corporation

India is also running a program for the teachers of the Muncipal Corporation of Delhi and the Army Public Schools through the Shiksha Initiative.

Learnings from the Projects

While computer education appears to have been taken quite seriously by many State Governments and initiatives of the Private Sector, most of these programmes are aimed at preparing students for the job market. Also, the programmes are software centric, i.e., emphasise the learning of a specific set of software tools. There is an urgent need to demystify this technology[18] and deemphasise the learning of specific tools. A balanced generic curriculum, where computers are relegated to their due place as tools, and where they extend the horizons of other subjects is a must. Availability of appropriate software in Indian languages and in adequate numbers will catalyse this process.

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[18] As the children using the Hole in the Wall or the videographers of Pastapur have demonstrated, the hype about teaching people to to use technology, even computers is unjustified.

Appendix 1

GUEST SPEAKERS AND THE TOPICS THEY PRESENTED BEFORE THE FOCUS GROUP

Saturday 5 February, 05

Speaker	***Topic***
Dr. Sugata Mitra, N.I.I.T.	ET for Rural Areas (Hole in the Wall project)
Prof. Manmohan Singh, N.E.H.U	ET in the context of hilly terrains & isolated areas
Prof. D.R. Goel, M.S. University Baroda	Research Areas for ET programs
Shri. Kiran Karnik, President NASSCOM	Models of using programs & software viz.Discovery Channel

Sunday 6 February, 05

Speaker	***Topic***
Dr. Usha Reddi, Director CEMCA	Experiences of third world countries in interactive technologies
Sushree Karishma Kiri, Microsoft (Project Shiksha)	Computers in Education
Sushree Jai Chandiram, Media expert DD, IGNOU, Ex JD CIET	Using interactive technology, viz. Teleconferencing
Prof. M. Mukhopadhyaya, Director NIEPA	Reorienting administrators in ET and other innovative programs
Smt.Sushmita Mitra, Director Academic N.I.O.S.	Open learning systems: Strengths & weaknesses